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General Aspects of Instruction: Learning, Teaching, and the Curriculum

Reviews the literature for the three-year period since the issuance of Volume XII, No. 3, June 1942.

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INTRODUCTION

THIS is the fifth issue of the REVIEW OF EDUCATIONAL RESEARCH dealing with "General Aspects of Instruction: Learning, Teaching, and the Curriculum." It reviews the studies published in these areas for the three-year period ending December 1944. Several changes have been made in organization of the content since the first issue was published in 1933. The first three cycles of the REVIEW included a chapter on supervision, a subject which is now treated under "Organization and Administration of Education." In this issue, as in the previous one, are studies in the fields of philosophy, radio and visual education, and school libraries.

Altho there is no dearth in the number of articles published, there were fewer studies in some areas during the last three years than in the preceding three-year period. This is to be expected, since many young men and women who normally carry on research are with the armed forces in other than educational activities. Furthermore, the effects of the war on education are reflected in the studies reviewed. Studies carried on in military camps reveal the effects of controlled environment and the value of large numbers of cases. In spite of the influence of the war, the authors of the various chapters have tried to review all those studies that make a contribution to education whether they were made in a military camp, in a scientific laboratory, in a classroom, or in a library.

From the published articles in these areas two generalizations may be made. First, many of the studies have been conducted under the auspices of educational foundations and cooperating agencies and, second, the research technics used in evaluation have become less statistical, but no less valid, than those formerly used.

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CHAPTER I

Philosophy of Education

HAROLD SODERQUIST

Philosophy as Research

WHETHER philosophy may be rated as research has been much debated. The reviewer proceeds on the premise that making observations and thinking about their significance are two inseparable aspects of any research which is not headed for futility, but that specialization is permitted here as in other occupational areas. In other words, the scientist, who has little time or inclination for speculation about his findings except within his own restricted field, and the philosopher, who is fully occupied in trying to find some common meaning in the multitude of data furnished by science and by common observation, are both considered as engaged in research provided that there is evidence that both are honestly and obstinately concerned with truth.

Doubtless, in view of the all-inclusiveness of his field and the number of possible frames of outlook into which he might fit the multitude of jigsaw bits of experience, the philosopher will be tempted to choose that frame which is most congenial to his own temperament and will-to-believe. Nevertheless, the reviewer is still inclined to rate the philosopher's efforts as research, provided that the faults of irrelevance to living problems, self-contradiction, disregard for recalcitrant data, and unworkability in the practical situation are not too immediately evident in his structure.

Certainly there has been no smaller volume of contributions to the field of educational theorizing during the past three years than during any previous period of equal length. Does any of it measure up to the standards of research as defined?

Most of the contributions herein mentioned, only samples because of lack of space, are of the briefer critical type, and are efforts largely by younger thinkers in the field. Because of their pertinence to the problems which beset education these contributions are cited as philosophic research.

Philosophy and Education

It seems fitting to open this REVIEW by calling attention to the increasing recognition accorded philosophy and general theory in education. While for a number of years educational research of the scientific experimental type threatened to replace philosophy in our teacher education curriculums, the trend today is toward a restoration of the latter. Any clash between philosophy and science in education is, as Champlin (11) sees it, "unworthy controversy."

The trend in defense of educational philosophy is well represented by replies to Valentine (49) who in 1940 severely criticized that subject as devoted to finespun metaphysical theorizing for which students were ill

prepared and had no need. Thompson (47) immediately countered that it is necessary for the professional educator to know "the differences which varying basic philosophical assumptions will lead to." While Hatch and Hatch (23) reported a study showing how educators and their philosophies follow rather than lead social and political change, Browning (8) and Wahlquist (52) insisted that teachers need philosophy if they expect to be professional people and not mere technicians. Wise (54) demonstrated the need of philosophy in examining the assumptions of all sciences and arts (including education and educational research) to save time in useless experimentation.

A most significant recent event demonstrating the increasing importance accorded to philosophy in education is represented by the action taken by the Committee on the Teaching of Philosophy, Eastern Division of the American Philosophical Association. This report, prepared by Balz and Larrabee (3) proposed that the widening gap between educators and professional philosophers be closed and that since each field must be a practical concern of the other (as apparently only James and Dewey seriously recognized) the two professions henceforth work together. In a later appeal (32) the same authors urged "union now" on the premise that only one acquainted with both philosophy and education is fit to teach.

The Continuing Battle of the Systems

The day of comprehensive doctrinaire formulations seems to be over. The most recent of these, Frederick S. Breed's *Education and the New Realism* (1939), is mentioned here because it was the first systematic attempt to deduce an educational philosophy from realism. Tonne's more recent contribution (48), while entitled "realistic philosophy," is founded not so much on a conscious metaphysics as it is an appeal to common sense, based on the hard realism of the demands of practical schooling which has found pragmatism unworkable. Defenses of the other systems are elaborations of previous basic statements, represented in this review by Maritain (37, 38) and McGucken (36) for the Catholic neo-Thomists, by Kilpatrick (31) and Childs (12, 13) for the experimentalists, and by Horne (25) for the idealists.

If the number and volume of published statements by partisans of systems may be taken as a guide, there has been a growing reaction during the last three years against pragmatism and against the experimentalism of the "progressives" who take their cue from it. The critic of progressivism best known to teachers in the elementary- and high-school field is William C. Bagley. While Bagley himself is considered an "essentialist" in education, he is willing to accept whatever good there may be in what he calls the "fair weather" philosophy of progressivism, which has seemed to him (2) and to Shaw (45) to be willing to "throw out the baby with the bath" in its recent "scurry for cover" (referring to the recent change in name by the Progressive Education Association).

Perhaps the most notable attack on pragmatism is that made by Kandel (30) a distinguished educator who has had close contact with protagonists of this way of thinking. Kandel dubbed the pragmatic tendencies of our times as anti-intellectualistic and a "retreat from reason," the same brand of thought which activated Hitler and the Nazis.

Professors at War

But for the most resounding clash between the traditional antagonists one must go to the field of higher education. The controversy is mainly between those who might be classified as "idealists" in their educational thinking and those who are "experimentally" minded. Because of their aversion to the latter, a few of the "realists" have also entered the dispute, and with some reservations have sided with the idealists. Neither side is satisfied with the showing of higher education today. Both feel that it is without rudder or goal. Each side charges the other with failure to prepare youth for the intellectual and moral demands of democracy and of a world in need of moral revival.

What is heartening for education is that both sides profess to welcome the showdown which may result in something positive for the guidance of the distraught educational profession. The great antagonists are still Robert M. Hutchins and John Dewey, each with followers more belligerent than himself.

The present phase of the controversy has been precipitated by the wartime contact between the colleges and the military forces, altho the beginnings of the struggle had occurred long before. The highly vocational and professional demands of the military and the subordination of the humanities to the mechanical and scientific subjects have alarmed those who see the present chaos in the modern world as due to failure in social and moral thinking. The remedy proposed by Hutchins is to make the humanistic classics of history, the "great books," the required core of the college curriculum and to keep vocational and professional training out until a basic general education has been acquired. This has been done more completely at St. Johns College than elsewhere. Eloquent arguments in the name of freedom and morality have been made by Hutchins himself (26, 27). Even more outspoken and aggressive are Adler (1), Barr (4), and Buchanan (9) who have gone all out both thru press and platform to force the battle. Van Doren's apology (50) for the liberal arts, itself rated by many as a literary classic, was prepared at the request of the Association of American Colleges.

The opposing side has countered with equal "either-or" vehemence. Dewey (16) welcomed the fray as a "drawing of lines" which "will not only serve to clear up confusion in our educational estate but will tend to breathe life into the dead bones of philosophy." He admitted that there was some excuse for the medieval clerical educators in reviving the Greek classics, but observed that to go back to the old books is simply anachronistic. Bode (6) averred that there can be no compromise between

going back to the closed system of the eternal verities and going forward experimentally in the "wide-open universe" of James and Dewey. The methods of science must apply to social and moral problems as well as to the mechanical and technical. Hook (24) denounced any revival of persecution of "heretic" professors by the methods of the medieval church, while Gideonse (21, 22) attacked Walter Lippmann's demand (35) for moral education thru "restoration" of the old disciplines, proposing instead a new structure based upon the needs of the times.

In the meantime our analysts on the side lines see a deep significance in the controversy. Lindeman (34) prophetically announced that "the people of the United States, whether they know it or not, are moving irrevocably toward the most profound debate since the issue of slavery divided the nation." Dighton (17, 18) found in the "war of the professors" a reflection of deep-growing conflict of beliefs and aims in our political and social life. While both sides agreed that education is in sad need of reform, and both invoked "freedom," "democracy," and "liberal education," there was little agreement between them on the details of achieving these professed aims. Dighton saw totalitarianism and absolutism as characterizing the thinking of both camps, and their subordination of education to political ends, even tho in both cases it is done in the name of democracy, as making propaganda of education. Finally, he forecast that while social and economic change brought on by the war will itself settle the issue, leaving no one fully satisfied, the hopeful result of the "academic self-analysis" will be a greater awareness on the part of more people of our real educational problems.

Criticizing Dighton for deploring the enlistment of education for the ends of politics, Brameld (7), who championed social functionalism in education in his turn, lamented the present reactionary trend. The retreat of the militant Progressive Education Association to its new and safer name American Education Fellowship, the rise of the Essentialist Committee for the Advancement of Education, and the demise of the progressive journal *Frontiers of Democracy* are ominous signs of the counter-revolution. The success of the revolt he charged in part to Hearst, to the extremists among the progressives themselves, and to inadequate financial resources for making progressive methods functional in those schools which have favored them. However, he did admit, wistfully, that the growing public enmity to modernism may be a part of the general disillusionment arising from the failure of liberalism to solve our social and moral problems.

Theology and Education

General disillusionment has made certain groups among our educators bold not only to demand a return to the timeless and traditional in the liberal arts but also to the verities of religion. Most active have been the Catholic protagonists of neo-Thomism, best represented by scholarly Maritain (37, 38). To counter possible alarm at the thought of returning

to medieval verbalism in educational method, special efforts have been made to demonstrate that self-activity by students is also demanded by modern scholastics (for example, Johnson (29) and Sanders (44)). Analysis makes it evident, however, that by "activity" is meant active thought in following the instruction rather than the wide-open experimentalism sponsored by the pragmatist-naturalists. The latter are still looked upon as the great enemies of religion and morals.

Outside of Catholic circles there is a growing call, altho less outspoken, for religion as the nucleus of education. Nash (41) proposed that Christianity be made central in instruction. The Protestant fundamentalist view was represented by Cooke (15) who saw religion as the only answer to the contemporary quest for certainty. The Protestant journal, *Christian Century*, rejoiced at the installation of a federated theological faculty at the University of Chicago and at Hutchins' exaltation of theology to the pinnacle of the liberal arts temple (14).

The last yearbook of the John Dewey Society (28) showed that spiritual values are taught in the public schools without the introduction of dogma and that efforts in this direction can be improved.

Toward Eclecticism

Besides the trends of thought in education already described there remains what appears to the reviewer as the most significant of all, namely, the increasing demand for mediation between champions of clashing metaphysical views. Whether this call is due to "war fatigue" or to increasing philosophical insight is not clear. However, events have a habit of shaping thought. The Forty-First Yearbook, Part I, of the National Society for the Study of Education (42) which appeared in 1942 is notable in that it is a symposium of proponents of the four main viewpoints in education. While no special effort at conciliation is made, Chairman Brubacher expressed the hope that "if . . . this yearbook can aid ever so little in reducing conflicts, in promoting communication, and increasing cooperation, it will have been eminently worthwhile."

The authors of most of the textbooks that have been published in recent years have tried to present impartial expositions of each of the historical world outlooks and its implications for education, leaving the teacher to make his choice. Indeed, eclecticism has often been suggested as the preferable route, altho because this recourse has had such a bad reputation in philosophical circles, few educational philosophers have had the temerity to advocate it all out. However, Lawson (33) reassured that in spite of the general conception that eclecticism is cowardly, it really takes more courage to follow this route than to "run with the herd" by uncritically attaching oneself to some ism or cult. He warned, however, that true eclecticism is neither syncretism, nor expedient "middle of the road" thinking, and that it must not itself become a fetish. Like any other philosophy eclecticism must subject itself to the test of reason, experience, and science. Pulliam (43) pointed out that our enthusiasm of thirty years ago for education as

a pure science has dimmed, and that we have gained the insight that education is a practical art like medicine and engineering, applying the findings of many of the pure sciences. Cultism is no more applicable in education than in any other practical art. Champlin (10) concluded that the either-or logic in education is futile and leads toward confusion; that the both-and procedure is necessary for fusion. Weiss (53) made a case for both traditionalism and progressivism in education. Wahlquist (51) concluded that "the presumably illogical middle-of-the-road schoolman who has a real sense of values is freer than the one who attaches himself to one of the systems (including even experimentalism), which soon leads to an educational stereotype." Progressive-essentialism in education is advocated by Stanley (46) to avoid being caught on the horns of the false dilemmas of thought which grow out of the either-or reasoning of the partisans. Blau (5) felt that it is high time for educators, both progressives and fundamentalists, to agree on some cooperative philosophy to enable them to stand together in opposing forces which would hold the profession in a rut.

Illustrative of the conciliatory trend in educational thinking and in line with the semantic demand for reduction of intergroup misunderstanding arising from disagreement over the meaning of words, is a call for critical analysis of the language and detection of false dichotomies in the reasoning of our educational spokesmen. Typical of this trend is Foley's plea (20) for analysis of the meaning of generalities used by partisans in educational thought. In a later statement (19) he would have teachers declare their "educational independence" by critically examining the slogans by which would-be educational leaders have confused and tyrannized the profession for many years. Gideonse (21) declared that "a good deal of the argument" in education "is anchored in the special use of words—and tends to evaporate once terms are carefully defined and consistently used." Apparently the methods of Socrates are as much needed in our day as they were when he was the "gadfly of the state."

Meantime the cause of mediation is championed in distinguished manner by an outstanding liberal in social and educational thought. Meiklejohn (40) saw us now as suspended between the educational world of the medieval church and the present world of pragmatism, a world "powerless to be born." A new education must be sponsored by a truly reasoning state constituted on brotherhood, taking its "cue from Rousseau," and having a planned program for the training of men to use their natural powers of reason. At its highest level such a state would be a secular international order.

Meiklejohn's recent reply (39) to John Dewey (16) was an effort to mediate between the two camps in higher education, who, he insists, both work for the same ends tho their means may be different. As a part of his argument he defended the curriculum of St. Johns College, which, he pointed out, is as much devoted to the study of the sciences as it is to the great books.

Conclusion

The reviewer suggests that if the educator's thinking must be eclectic (this seems to be unavoidable if he is to find much practical use for philosophy), it would seem that a new type of metaphysic and a new logic are demanded. It is the reviewer's opinion that even pragmatism which appears most friendly to the idea of a plural approach to the solution of life's problems has become too absolutistic in its prescriptions for so large a part of life as education. John Dewey recently pleaded that the straight-line, "either-or" logic used by some of his followers in their controversial zeal is no more suitable to defend experimentalism than any other doctrine. The admission that dogmatism is indefensible even in combating dogmatism surely has interesting metaphysical implications. It seems to suggest that experience presents so ungeometrical a surface to efforts at map making that no single, systematic, tightly-reasoned world-formula has yet been found workable when taken seriously and pursued to its logical conclusions. This reasoning is supported by the common-sense intuition that "one should not go to extremes in applying any system of belief," worded in sophisticated manner by Samuel Butler: "Extremes are alone logical and they are always absurd, the mean is alone practicable and it is always illogical."

What has been said suggests that it would be safer for conscientious people to treat the great metaphysical formulations as works of art, each to be accepted as hinting at useful truth, but in no single case to be taken as schematic of all the facts of experience. Taken all together, and even so applied to life's problems with a certain amount of artistic looseness, they would no doubt shadow the truth more faithfully than if adopted singly as blueprints for action.

One other suggestion remains, namely, as Bertrand Russell has ventured, "that two rival hypotheses (may) be able to account for all the facts" (*Problems of Philosophy*). If this is true it is suggested that idealism and realism both be accepted as eyepieces of the cosmological telescope to be used alternately as human scientific and aesthetic needs demand; and that pragmatism be retained on "sanity patrol" to remind observers that the philosophic instrument is only an extension of *human* vision and must be used always for *human* purposes. The reader will understand that this also is spoken poetically.

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CHAPTER II

Curriculum

HELEN HAY HEYL and WILLIAM E. YOUNG

WITHIN the three-year period 1942-44 there appears to be a smaller number of significant research studies on the general curriculum initiated than in any similar period for a decade. Some research previously begun has been carried thru to publication. Much of this has centered in secondary and higher education. Altho there have been only a few studies such as Felsted's (26), Leslie's (38), and Pounds' (53) which have dealt directly with the war situation, the impact of the war may explain the increased proportionate emphasis on the upper levels.

On the preschool and elementary-school level research is slanted more and more toward the genetic approach. There is still some investigation into the relative worth of the activity or informal procedures on the one hand and subjectmatter or formal methods on the other. Even this type of research is giving way to inquiries concerning how children of various ages and in differing circumstances grow and develop and what environment (curriculum) is best suited for them.

The curriculum research on secondary education continues to have large emphasis on such mechanics as curriculum constants and college requirements; but this emphasis is shifting toward a study of youth, their needs, and interests.

In the research in higher education there is an increasing tendency toward critical evaluation of the offerings in liberal arts colleges, teachers colleges, and professional schools. Indications point to much curriculum planning on the part of both secondary schools and colleges to accommodate the returning veteran.

Curriculum research on all levels is becoming less and less a matter of individual initiative and effort. Curriculum research is now being conceived more as a large cooperative activity frequently financed by foundations and carried out thru national or regional groups. Two rather important examples of such studies are Ivey's monograph (20) on channeling research for the Committee on Southern Regional Studies, and Vickery and Cole's publication (70) for the Bureau of Intercultural Education.

In connection with this chapter other surveys and critiques of curriculum research (11, 13) should be scrutinized.

Findings in Childhood Education

Quick's study (55) of the implications of the philosophy of experimentalism for some unsolved problems in the education of children growing toward six should be useful to those concerned with curriculum planning for nursery school, kindergarten, and the early months of first grade. Three large groups of problems and needs were found: (a) those inherited from the pattern of the traditional school and the neglect of five-year-olds;

(b) those problems that the war and the fast-moving pace of change have raised to the level of social concern; and (c) those problems that thoughtful people must face as they look toward the needs of young people in the postwar world. The study developed fourteen criteria from research literature and from tested experience as a basis for planning preschool education, for criticizing programs already in existence, or for meeting ongoing problems.

The Iowa Child Welfare Research Station, the Brush Foundation Studies of Child Growth and Development at Western Reserve, the work at Yale, and research in similar centers continue to accumulate essential findings regarding human growth and development and regarding how learning takes place. Jersild and Fehlman (34) have reported on principles for curriculum making derived from such research, and Prescott, Redl, and others working at the Collaboration Center on Human Development and Education of the Commission on Teacher Education of the American Council on Education at the University of Chicago have undertaken a similar responsibility. Significant in this connection also is the report (2) of the American Association of Teachers Colleges which, tho primarily aimed at improving the education of prospective teachers, is important for curriculum workers at all levels in its statement of basic generalizations. Likewise important is the report (50) of the faculty of the University School at Ohio State University who have carried their analysis of child development study and its curriculum applications from ages three thru eighteen.

Several attempts have been made to determine the effectiveness of the "activity" idea in education in line with modern theories of child development. In the three-year period under consideration there appear to be at least three studies dealing with the informal curriculum at the level of childhood education. Black (7), in a historical treatment of the activity movement, investigated the evolution of the concept of activity in education from its beginnings in Europe to the present time in the United States, particularly as it pertains to education in the first six grades of the elementary school. The study points out the emergence of a number of practices which have been included under the name of activity program and attempts to evaluate these and determine what practice should be. The method used was that of a checklist questionnaire constructed from reading a large selected body of literature related to the activity program and having the items rated by a jury of experts. As compared with traditional schools, the suggested practices that have evolved indicate the advisability of providing many concrete experiences, more flexible schedules, more participation by teachers and pupils in selecting subjectmatter, and the socialization of classroom procedures. Spikes (64) made an evaluative appraisal of the curriculum programs in three elementary schools at Burlington, North Carolina. School A was the most informal situation in that city as determined by a rating scale for evaluating the degree of informality of teaching method. Effects were compared with school C, very formal and

traditional, and with School B less formal than C but more formal than A. The study was limited to group pupil-growth; and objective and quantitative comparisons were made in general achievement, reading, work-study skills, critical thinking, library information, music, and art. Safeguards were taken to make the comparisons valid. No significant differences between the three schools were found in the objective measurements. The author concluded that on the bases of the data collected it would appear that School A has a more effective curriculum program than School B and a program much superior to School C. Lindsay (39) attempted to discover to what extent and by what means continuity is provided thru the curriculum of progressive elementary schools and concluded that selection of curriculum units largely determines this.

Baker (5) investigated the content of spontaneous discussions of children in Grades II, IV, and VI. Records were obtained of ninety-six discussion periods involving 342 children. Baker thought three findings were important from the standpoint of curriculum making: (a) The second-grade children talked primarily about their own activities and their homes while the sixth-grade pupils gave attention to events and happenings quite remote from their activities and their homes and the fourth-grade children were about midway between. (b) Little real discussion of the "meeting of minds" type appeared in the second grade, but in Grades IV and VI it did appear in almost 50 percent of the contributions. (c) The value of discussion as both a teaching technic and as a method by which teachers can learn certain information about their children was demonstrated. Brosnan (10) showed how a continuous reconstruction of the elementary-school curriculum may result in better teaching of children and analyzed the creative, the social, and the tool activities in the elementary-school program. Shaner (59) studied legislative control over the elementary school in the forty-eight states for the seventeen-year period ending in 1940 and compared his findings with J. K. Flanders' study which was made in 1925. The tendency to fix time-specifications to subjectmatter requirements was considered especially significant.

Studies in Secondary Education

Evaluative studies in secondary education deal with cooperative planning, guidance elements in the new type of secondary-school program, types of curriculum organization, and studies of the needs of youth and needs of society. Axford (4) attempted an evaluation of a one-year program in teacher-pupil planning in a small Nebraska high school. His technic and procedures followed the lines of the Eight-Year Study (54). Rice (57) collected information regarding cooperative planning and teaching from 285 secondary schools located in various regions of the United States. He found curriculum modifications resulting, but little realization on the part of teachers that they share with the administration a responsibility for interpreting their work to the public or for gaining the public's suggestions relating to changes in the school. Weitz (73) evaluated the guidance serv-

ices to pupils in a college preparatory course, and Smale (60) demonstrated the improved guidance features and services rendered to youth by the "new type," "basic" or "core" courses in ten of the schools in the California Cooperating Schools project (14). Smale believed that he was able to point the way to a new and fundamental reconstruction in guidance programs for high schools. Helsabeck (33) studied the initial phases of a consultative curriculum service offered on a statewide basis to the secondary schools of Virginia thru which it was hoped that public schools and colleges of the state would be stimulated and their work better coordinated. These curriculum counselors were attached to the staffs of colleges concerned with the education of teachers, but their work centered primarily in promoting the Virginia program for improving instruction in the high schools, particularly in relation to the development of the core curriculum. The venture was found to have functioned helpfully and suggestions were made for further improvements.

Strong (69) evaluating the core courses in selected secondary schools studied the major purposes of the core courses; their subjectmatter content; the place of guidance, general education, and continued improvement of fundamental processes; teacher preparation for the work, nature of pupil activities, and related problems. He defined core course as the "double-period course taught by a single teacher, cutting across subjectmatter lines, sometimes, referred to as 'Social Living,' or 'Basic Course,' but stressing 'areas of life activity' rather than single subjects, and placing special emphasis on individual differences in interests, needs, maturation, and special abilities." Among other recommendations Strong urged that the development of such courses should evolve out of the lives and enthusiasms of the pupils concerned and not be adopted from practices in other schools.

The "broad-fields" curriculum in the secondary school was studied by Gordon (30) to discover what was being done and might be done to reduce the overlapping heterogeneity of the secondary-school curriculum. Among his conclusions were that "there is no such thing as *the* broad-fields curriculum, but rather, there is a series of broad-fields curriculum types"; that educational psychology needs to join educational philosophy on equal terms in reconstructing the curriculum by integrating its discoveries in mental hygiene, remedial rehabilitation, physical factors, and personality adjustment organization; and that the broad-fields curriculum may offer promise for the postwar secondary school.

Norberg (47) investigated present tendencies and conceptions of youth education; Frick (29) examined various experimental approaches to curriculum improvement and found five fairly distinct patterns: efforts to modify and improve content of the separate courses within the present framework, broad-field courses, the unified studies approach, the major functions of social living approach, and the needs of adolescence approach. In the last two, he found a "core curriculum" usually included. Pointing out that the acceptance of any one pattern did not necessarily lead to improvement, Frick recommended that the approach include study leading

teachers to a clearer understanding of democracy and its implications for education, better knowledge of the meaning and nature of learning, and fuller understanding of the nature and needs of the particular community for which the curriculum was being established. He outlined a proposed program for the high schools of South Carolina.

Among the "needs of youth" studies Doane's (22) described the various current usages of the term *need* and examined needs as a basis for vitalizing the curriculum from the viewpoints of faults or shortcomings of society, lacks or shortcomings of youth, and youths' psychobiological needs. He concluded that, in general, courses concerned with personal problems are more desired by young people than those concerned with social problems. The evaluative instruments devised should be helpful to other schools and since the cataloged needs were found to lie largely within the framework of courses already existing in many secondary schools, this study could be a practical aid to schools in making curriculum adaptations.

Bates (6) conducted a survey of the citizens of Norwood, Ohio, regarding their judgment as to what changes in their local high-school program would best make for the educational growth of boys and girls and a survey of the felt needs of youth of the community to determine a dynamic program of education. The surveys were detailed and these data objectively weighed. Four distinct needs were found from the out-of-school youth survey. These were for broader training in vocational areas; the establishment of a terminal junior college; the improvement of a junior placement service and follow-up with a guidance program; and the provision for a community recreational center and program. Recommendations were made in line with these findings. Merkley (43) considered the reactions of nineteen citizen groups to certain elements of the curriculum. Data were gathered from 1304 persons. Morrison and Soper (46) conducted a five-year study of the adjustments which rural secondary schools should make in meeting the needs of rural young people; and Miles (45) likewise pointed out necessary adaptations in the educational procedures that affect the rural curriculums on various levels. Hall (31) examined the usefulness of curriculum offerings to young people who do not go to college; Dotson (23) studied the changing socio-economic background of an agricultural-mining county in Kentucky as a basis for curriculum changes to meet changing needs in the community; Abraham (1) examined the process of curriculum change in one of the secondary schools cooperating in the Eight-Year Study. Reid (56) attacked the problems which recent changes in the secondary-school curriculum have presented to teachers. Weber (72) made a study of the in-service education of secondary-school teachers as a part of the North Central Association studies.

Among the comparative, historical, and survey treatments during the three-year period, Bollman (9) studied the relation of college entrance requirements to the secondary-school curriculum. The secondary school has contributed more to American education and life when it has served youth comprehensively than when it has functioned narrowly as a college-

preparatory school. While some gains in modernizing the secondary-school curriculum have been made, a great deal remains to be done. The study is valuable for its summarizing descriptions of other curriculum studies. Spellman (63) by use of questionnaires gathered facts and general information about the rural Negro population of Wilson County, North Carolina, to determine their relative position in the population, what they do, how they live, their educational status and opportunities and upon these data outlined principles on which a program of rural secondary education could be developed for them. The survey covered 443 of the 1249 Negro families of the county and the questionnaires were filled out at school by the most mature child in each family under the direction of teachers and Jeanes supervisors. Blanks were taken home overnight, if necessary, to obtain complete information. Having found that constant migration of the people was an essential element in the situation at present, he recommended that the schools organize their work on the short unit or project basis by which a child, even tho only a short time in a particular school, might complete something tangible during the time there; and that the program should stress the values of home ownership and family stability. Lantz's careful review (36) of legislation pertaining to the secondary-school curriculum in seventeen states included within the New England, Middle States, Northwest, and Western Associations of Colleges and Secondary Schools compared findings with similar data of the states of the North Central and Southern Associations. His report will be of interest to those concerned with legislative trends.

Evaluative, Comparative, and Historical Studies in Higher Education

Many scientists today consider that concepts based upon the characteristics of classes of objects are of limited usefulness and that concepts defined in terms of the operations which they require are of greater value for scientific progress. Certain educational research is likewise pointed in this new direction and in the period under review toward an increasing number of studies of the evaluative type in which a critical analysis of educational programs has been made in terms of operational objectives as well as of possibilities and attainments in relation to such programs. On the college level Edmiston (24) attempted such an evaluation of the integrated professional curriculum at Milwaukee State Teachers College. Like the Eight-Year Study (54), and the evaluation of the amount of activity present in the New York City curriculum program, reviewed in this magazine in June 1942, Edmiston's study measures the results in terms of stated or implied objectives of the program. She defined operational objectives in terms of what a teacher is expected to do in certain situations. Both operational and situational aspects were studied. It was found that the program was effective in bringing about changes in the behavior of teachers. The study likewise revealed certain weaknesses in the program. Tho some questions might be raised concerning the instruments which were devised, this research

contains valuable hints for those interested in the newer type of evaluational study. The study did not determine whether the program was in fact an integrated program; it did not demonstrate that the objectives toward which the faculty was moving were suitable objectives for bringing about integration in learning or that such objectives could be better attained thru the program at Milwaukee than thru other types of practice teaching. McNaughton (41) carried on an evaluative study of similar nature of the curriculum offered by the School of Education at Stanford University.

Fleck (27) illustrated an interesting approach to the problem of curriculum construction in teachers colleges thru the development and use of resource units for an orientation course for freshmen. Lambert (35) made an analysis of the curriculum of the Teachers College of the University of Cincinnati in which several new technics were used. His distinction between "concurrence" and overlapping or extent of treatment found in common between course units should be noted. Clift (16) carried the appraisal of the curriculum in four Negro teacher education institutions thru seven phases, using a democratic philosophy of education as a source of social and educational values and deriving criteria therefrom. He found that in the schools studied little serious effort had been made to state aims and purposes consistent with an integrating philosophy; that not much had been done to imbue prospective Negro teachers with the desire to become progressively better adjusted as a minority group in American culture; or to provide learning experiences which aimed to translate basic democratic values into behavior patterns. Clift made recommendations accordingly. Offner (49) studied the administrative procedures being used for changing curriculum patterns in selected state teachers colleges in New Jersey, New York, and Pennsylvania. Sister Mary Zembrodt (74) designed a plan for the development of a curriculum laboratory at St. Louis University based upon the needs of teachers.

In the field of the liberal arts colleges, Burkhardt (12) combined various bases used in other college studies in one general extensive study to develop the data needed for establishing a functional educational program at the new junior college at Norfolk, Nebraska. Bliss (8) studied the needs of the student population at Belhaven College as a basis for curriculum development. Hange (32) studied the trends in subjects required and presented for college admission and made suggestions for curriculum changes in liberal arts colleges of the Northwest. Mother Mary McQueeny (42) and Sister Mary O'Neill (52) developed respectively a historical treatment of a Catholic woman's college showing it to have a "core curriculum" one hundred forty years old, the study of religion forming the core, and an evaluation of the courses of study as revealed by the published catalogs of nine selected Catholic women's colleges located in different sections of the country.

One of the important studies of this group is Spafford and others' (62) full treatment of the curriculum of the General College at the University of Minnesota which highlights the values in almost ten years of re-

search and of a continuous process of self-criticism and evaluation. The Cooperative Study of General Education (21) and similar undertakings are reviewed elsewhere in this chapter.

Cooperative Studies and Surveys

Among the experimental studies now under way in the elementary-school field are the Sloan Foundation Studies of Applied Economics in three rural regions—in Kentucky where the study centers on food under the guidance of the University of Kentucky (58); in Florida (51) where the University of Florida is sponsoring a program on housing; and in Vermont where a clothing project sponsored by the University of Vermont has been in operation only a short time and is not yet reported. The Kentucky experiment has been evaluated at each stage of its development. All of these projects need to be carefully evaluated in terms of children's needs, interests, and opportunities. It might be valuable, likewise, if similar projects were initiated in rural communities of higher economic level.

Leonard and others (37) under the sponsorship of the Society for Curriculum Study reported on 154 studies of modern education, carefully selected on a basis of thoroness and reliability. These data give accumulating evidence that modern education while ensuring a high degree of efficiency in developing both old and new skills, including the three R's, is making steady progress toward attaining likewise important values in the social-personal development of pupils. The story of the Progressive Education Association's Eight-Year Study of thirty secondary schools was continued in a report (54) on the curriculum which deals with both "the what and the when" of the developing programs in the various schools during the years of that study. The Southern Association Study (61) reported on evidence of student achievement in the cooperating secondary schools of the Southern Association Study. The Michigan Study (44) of the secondary-school curriculum has issued its first five-year report. A number of reports have been issued on the California Cooperating Schools project (14) regarding curriculum patterns and types of organization developing in that state. The North Central Association has issued reports (48) on its study of general education in the American high school. The American Youth Commission's final report (3) has many implications for curriculum workers, altho the general direction in which these should point is, because of swiftly changing economic conditions confronting our youth today, less clear than when the research findings were being assembled. A report of other cooperative school projects (28) going on in various sections of the country has been issued by the Florida Curriculum Laboratory as a joint project of the University of Florida and the University of Oregon.

On the college level the period has brought forth the important findings of the Commission on Teacher Education (17, 18, 19) and the Evenden progress report (25) on the Sloan Foundation curriculum study fellowships in teacher education. The reports of the five-year Cooperative Study of

General Education (21) are pending, as is the report of the Commission on Terminal Education of the American Association of Junior Colleges, to be published by Harper's in 1945.

The period has likewise seen the culmination of some important school surveys which have placed emphasis upon curriculum problems. In *Louisiana Looks at Its Schools* (40) the Louisiana Educational Survey Commission makes a contribution in demonstrating that democratic practices can be effectively used in shaping a state's educational policies. Strayer (65) has brought out his report of the schools of the city of Boston, of which Volume V (66) and Volume VI (67) are pertinent to this review, and his report on the school system of the City of New York (68). Canada and Newfoundland Education Association (15) has presented a report of a survey of its schools. The Virginia Education Commission has issued the report of its research committee (71) with findings on the curriculum, and the Alabama State Survey is completed, altho the report is not yet available.

Needed Research

There is apparently some popular reaction from modern practices. This reaction is not supported by research. Research could, however, assay the amount of this reaction and ascertain its causes. Many changes in curriculum content have taken place during the war years. These changes have usually been made in response to emergency demands and have not been carefully thought thru and evaluated. Research is needed to test the value of these programs. What are the best types of intercultural education, for example? Will the study of Spanish promote understanding of our South American neighbors, or could equally good or better results be obtained in less time thru planned units in the social studies? Should such content be offered in separate units, or should it permeate many phases of the whole curriculum?

Is the issue of *integration* settled, or is further study required? What is the best type of education for the period of early childhood? Are nursery schools and kindergartens essential for all children? Is there any practical substitute for children living in sparsely settled areas? What other educational extensions should the public schools consider, and what curriculum changes would such extensions entail?

Among many such unsolved curriculum problems there are at least four major areas in which much research remains to be done. These have to do with (a) types of curriculum organizations; (b) the effects of particular types of curriculums upon particular learners; (c) problems of the relationship between the school's curriculum and wider areas of living; and (d) problems of sequence. These issues need to be described and appraised. The curriculum of the future, likewise, needs new instruments and better perfected instruments of evaluation.

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CHAPTER III

Methods of Teaching

GEORGE C. KYTE

In the June 1942 issue of the Review of Educational Research, Corey and Mook (2) summarized fifteen investigations dealing with methods of teaching. These reports were published during the three years, 1939, 1940, and 1941 and dealt with general procedures or general methods employed by teachers. The present summary includes the sixteen research studies published during the three years, 1942, 1943, and 1944, which included statistical treatment and evaluation of general methods of teaching.

Comparison of General Methods

Over one-third of the published research studies dealt primarily with one or more of the general methods of instruction. Five of the six investigations were experimental in nature.

Utilizing the weekly four-hour laboratory-and-quiz sections in freshman chemistry, Thelen (15) compared the results achieved in (a) two control groups following different conventional procedures and (b) each control group and the experimental group following a modified procedure. Students in one group of control sections used small-scale laboratory equipment in carrying on their experiments. Those in the other control sections used the conventional-sized equipment. Both control groups followed the instructions in the same laboratory manual in conducting and writing up their experiments. Students in the experimental sections used methods involving (a) class evaluation of the learning objectives of each activity, (b) thoro understanding and planning of the procedures used, (c) use of sound scientific procedure in solving problems, (d) performance and participation with understanding, and (e) critical consideration of the procedures including generalization, reexamination, and replanning. In the experimental sections instructors followed "detailed known plans devised by the experimenter" in guiding their students. The students were not segregated during the two one-hour lectures given weekly. All studied the same subjectmatter.

At the beginning of the college year, "the freshman-week battery" of psychological and other tests were administered to all. The students registering in the chemistry course were given also a four-hour objective test designed to measure knowledge of "chemical concepts" and "certain abilities to think critically in freshman chemistry." Another test of this nature was administered at the end of the first semester and a third test, at the end of the year. Differences in gains were treated statistically. The resulting data indicated quite marked reliable differences in favor of the experimental groups over both control groups. The superiority of semi-

micro equipment over macro equipment was found to be a statistically unreliable difference.

Ward (16) compared two methods of teaching chemistry in high school: (a) the "traditional textbook method" with subjectmatter as "the end in itself," and (b) the "modern method" using subjectmatter "as a means to the end." In the new course of study, the latter method was indicated to be "pupil activities approximating life situations" in keeping with the "interests, needs, and capacities of the pupils." Twenty-one classes in five high schools, five teachers, and 420 pupils participated in the experiment.

Each teacher taught both methods. Equivalent groups were established by the use of intelligence quotients, previous scholarship averages, and scores made on two tests. One test was "noninformational or functional" in nature and the other measured "chemical information." The same two tests were administered at the end of the semester and differences in scores computed.

One case of significant difference favored the textbook method but eleven favored the modern method. When the results in the two types of classes taught by the same teacher were compared sixteen differences were found to favor teaching by the modern method; eleven of the sixteen differences were significant. Pupils with high intelligence quotients succeeded "equally as well" following either method but pupils with low intelligence taught by the modern method achieved better results than did comparable pupils taught by the traditional method.

Kahn (7) conducted a complex experimental study to compare the laboratory method of instruction with individual demonstration. The laboratory periods of classes in elementary college biology were taught by various combinations of procedures. The experimental program required the use of eight classes to determine (a) relative effectiveness "with respect to acquisition and retention of factual information," (b) the most beneficial way of combining demonstration and laboratory work, (c) the results obtained by application of "the new method," (d) the relative effects on the various groups of students enrolled, and (e) relative "effectiveness from the standpoint of certain general objectives of science teaching."

Each experimental group was paired with a control group, the number of pupils per group ranging from eleven to seventeen only. Pretest, posttest, and delayed retention (a week or two later) tests were administered to all classes. The Thurstone Psychological Examination was used to determine intelligence by percental ranks. From the treatment of the data, the following findings were obtained: (a) larger gains in final and delayed recall by the experimental groups over gains by the control groups were statistically different; (b) use of the new method for review purposes favored significantly the experimental group; (c) use of the individual demonstration was more effective than use of the individual laboratory method alone in the amount of subjectmatter learned and retained; (d) when included at the end of a period with a specific unit of work, the individual demonstration was more effective; (e) students who profited

most from the introduction of the individual demonstration were working for a degree in science and also the students of relatively low intelligence regardless of curriculum; and (f) there was a statistically significant difference in favor of the pupils of relatively high intelligence in the experimental groups over the corresponding students in the control groups.

Everote (5) compared two high-school courses in chemistry in which different methods of teaching were employed. The control classes took the regular year course and the experimental classes, a course in experimental science with practical emphasis on chemistry in agriculture. The study of one of the large units, "Agriculture in Southern California," in the experimental course was observed and studied critically by the experimenter.

Matched students from the two groups resulted in 230 pairs with records for the year and one hundred pairs with school records for the following year. Mean grade points "coincident with science courses" were computed. Also the students in the one hundred pairs filled out an "opinionnaire" of seventy questions dealing with agricultural issues. Statistical treatment of the data disclosed gains in the experimental groups significantly greater than those in the control groups at the .01 level. Changes in the thinking on the issues also distinctly favored the experimental group.

Jayne (6) investigated the information gained and retained by (a) high-school pupils listening to a lecture and (b) pupils seeing a motion picture presenting the same material. The experiment was conducted in ten freshmen general science classes enrolling 271 pupils. Two teaching units were prepared, the first being an elementary presentation of relativity and the second, a study of petroleum production. The two lectures were prepared from notes taken by repeated reviewings of the respective films. The lectures were illustrated by blackboard sketches and diagrams similar to the animated drawings in the films. One teacher gave the lectures to all classes. Five classes heard one lecture and the other five classes saw the corresponding motion picture. This latter group heard the second lecture while the former group saw the corresponding picture.

A pretest was administered on the school day immediately preceding the lecture and the showing of each film and a post-test on the school day immediately following. Retention tests were administered as follows: pairs of classes in Group I, three weeks after the lecture and showing of the film; Group II, six weeks after; Group III, nine weeks; Group IV, twelve weeks; and Group V, fifteen weeks after the exposures. The gains were computed and treated statistically. The immediate gains made in all ten classes from the lectures were significantly larger than those made from the film presentation. Differences in the amount of retention were significant for all periods except the longest period but the critical ratios tended to decrease with the passage of time. The lecture method "suffered greater loss from forgetting" than did the film method. However, the former "retained its superiority in gain."

Luderman (11) used a checklist with students to obtain their evaluation

of college teaching. They ranked five methods and gave reasons for their choice of methods. Composite scores of the rankings were discussion method, 206; lecture, 175; question and answer, 170; socialized method, 163; and special report, 87. The reasons stated by the students indicated that (a) there is recognized value in each method; (b) students enjoy and profit from classroom participation; (c) the lecture is considered the best ground covering procedure; and (d) college teachers should employ a mixture of methods to get the best interest and effort of their students.

Individual Methods and Group Methods

Utilizing four classes of college freshmen, Karp (8) taught the mechanics of English composition by two methods. Thruout one semester, he used an individual method of instruction in two classes, meeting each of five students for ten minutes of a class hour in the course of the scheduled class time per week. This schedule afforded each student a total of seventy minutes of individualized instruction during the term. Each of the other two classes was met in the conventional manner, the students receiving instruction in a group during a total amount of semester-class-time of 1350 minutes.

At the beginning of the semester, the Council on Education Psychological Examination and the Cooperative English Test, Form O, were administered to all four classes. At the end of the semester, Form P was administered; three months later Form O was administered again to obtain retention test scores. Numerical gains were computed and treated statistically. All groups made statistically reliable gains. All but one of the classes taught by the group method continued to gain. In general, students taught individually made greater numerical gains than did the students taught in groups. With the pupils of highest intelligence, individualized instruction was more effective than group instruction but with the students of lowest intelligence, the group method produced better results.

Klugman (9) carried on a study in arithmetical problem solving to determine whether children in the fourth to sixth grades could solve problems better when working in pairs than when working alone. The pairs were equated according to sex, race, grade in school, chronological age, and intelligence quotients. Using two forms of the Otis Arithmetical Reasoning Test, Klugman carried on the program with a careful alternation of pupils and testing to control practice effect, all pupils solving the problems in one or the other of the forms working as individuals and then on the opposite form working in pairs. All time limits were removed. The statistically significant results included: (a) when working in pairs the pupils average 7.27 problems correctly worked as against 6.18 correct when working alone; (b) in the pairs they averaged 1238 seconds of working time as against 1054 seconds when working alone; (c) results in the subgroups—boys, girls, whites, and sixth grades corresponded to the general findings. Other groups also tended to agree with the total group results but the critical ratios fell below 3.

School Excursions

The one investigation dealing with school excursions, by Clark (1), was a carefully planned and soundly directed experiment. In reality it consisted of four independent experiments involving different situations. It included four experiences planned for sixth-grade pupils: (a) visit to the Egyptian room of a museum; (b) trip thru a daily newspaper's printing plant, (c) excursion by streamlined train and return by bus; and (d) trip thru a main telephone exchange. Two weeks of instruction on the content were devoted to each unit, the experimental classes including the excursion and the control classes studying printed or mimeographed materials supplemented with pictures. A "zero control school" was given no instruction in any of the units.

Standardized forms of tests were constructed, tested, and then administered in all groups: (a) pretest, (b) final test, and (c) retention test given one month later. Also, at the conclusion of the instruction period, children indicated their likes and dislikes regarding each unit and stated the activities they would like to continue. The data from the test results, statistically treated, yielded detailed findings. The groups visiting the printing plant and the telephone exchange made higher scores than did their comparable control groups. Only the boys taking the train and bus excursion scored higher than did the boys in the control group. The groups visiting the Egyptian room scored lower than the control groups. But there were no statistically significant differences in absolute retention between the excursion-groups and the nonexcursion-groups except in the case of one group visiting the printing plant, which made significantly less gain than did the control group. The reactions obtained from the pupils indicated that greater variety of interests were aroused in the children taking the excursions and a wider variety of activities they wanted to pursue.

Aural Materials and Printed Materials

Rulon and others published three investigations comparing the effectiveness of phonographic recordings with comparable printed materials. The subjectmatter covered parts of recent world history from World War I (1918) to World War II (1939). The first study (12) dealt with knowledge gained through their use alone." The printed matter consisted of the recordings' content presented in playlet form. In seventeen representative high schools, matched groups were used. Three tests, each containing twenty-five true-false items and two five-item historical sequences, were constructed. They were "written from the type-script of the recordings." The procedure followed was: Tuesday, pretest; Wednesday, exposure to materials; Thursday, second test; and the following Thursday, third test. The experimental group heard the records and the control group was exposed to the reading matter for the same length of time. Every group took all three tests but the six possible testing sequences were followed. The

differences between pretests and each of the two post-tests were treated statistically. Initial gains were larger in the control groups than in the experimental groups, the "three top schools" yielding significant results in the reading-matter group. In the retained gains, however, the groups studying the playlet were not significantly superior to the groups listening to the recordings.

The second experiment (13) included the study of a unit including (a) the recordings for the experimental groups, and (b) the same contents in textbook style for the control groups. Each of the two tests constructed contained thirty-five true-false items and two five-item sequence exercises on the common content and sixty true-false items and four five-item sequences based on the supplementary materials used. Small groups in each of four high schools were used, pursuing the following schedule: Friday, pretest, thirty minutes; Monday thru Thursday, four class periods of forty minutes of instruction; Friday, final test, thirty minutes. The tests were administered so that one-half of each group were given Form A as a pretest, and the other half, Form B. The final tests were distributed so that each pupil received the opposite form to the one he used previously. In three schools eleventh-grade classes were included and in one school, tenth-grade classes. Obtaining no statistically significant results, the authors concluded that under the conditions followed, the recordings did not exhibit "any superior effectiveness in teaching the informational part of the material."

The third research study (14) was conducted to compare the "phonographic recordings with printed materials in terms of motivation for further study." Two tests were constructed, each containing sixty true-false items and four five-item sequence exercises. Matched groups in eight high schools were included in the experiment. The schedule and procedure were as follows: Monday, regular classwork unrelated to the experiment; Tuesday, pretest; Wednesday, (a) recording played followed by class discussion in experimental groups and (b) text materials read for the same length of time followed by class discussions in the control groups (five minutes before close of this period every pupil in each group received the same additional reading materials related to the contents to which they had been exposed); Thursday, Friday, and Monday, regular classwork only); Tuesday, final test. Alternation of tests as pretests and in each class was the same as that followed in the investigation (13) summarized above. The statistical results obtained were so conflicting that neither procedure was proved to be more effective than the other.

Study Procedures

Four investigations dealt with study procedures. Two of the research studies by Di Michael were made possible by the establishment of two equated groups in a high school. Groupings were made on the basis of sex, intelligence quotient, and chronological age. The experimental group was enrolled in a course on how to study, held two forty-five-minute periods

per week for twenty-seven sessions. During these same periods, the control group was in regular study classes "doing their assignments under the supervision of the regular teacher." In all other classes the pupils were mixed.

For one investigation (3), Di Michael constructed a test of 224 items, including true-false, multiple-choice, matching, and recall forms of testing. Statistically, he established its reliability to be satisfactory. It was designed to test the pupil's knowledge of good study habits. It was administered at the beginning and at the close of the experimental period. The pupils taking the course entitled "How to Study" substantially increased their knowledge of good study skills, making much greater numerical gains that did those not in the course. The superior pupils in the experimental group profited more than all others.

In order "to evaluate experimentally, the transfer effects of the how-to-study course upon the achievement of pupils," Di Michael (4) administered standardized achievement tests in medieval history, Latin, elementary algebra—subjects of the courses which the pupils were taking. The gains in achievement favored the experimental group, this result being especially true of the pupils in the middle groups of mental ability. The only difference of statistical significance was found in the comparison of gains by the superior students taking the how-to-study course over the gains by the superior students in the control groups.

Krause (10) compared two methods of study in science, using eight science classes in the fifth and sixth grades, involving 102 matched pairs. All pupils read the same chapter in a science book and then were given "an explanation of how to construct a test," including four types of standardized forms. The students were given some time to practice the constructions. Each class was divided into two matched groups. The pupils in one group formulated tests of their own; and pupils in the other group answered in complete sentences the questions included for each topic in the chapter. The time assigned for these activities was the same for all groups. The investigator prepared a new-type test covering the points asked for in the questions answered by the nontest-making group and administered it to all pupils. A percentage of differences of 10.2 was found in favor of the group formulating tests.

Wittenborn and Larsen (17) made "an attempt . . . to evaluate forty-two items in a study habit questionnaire," filled out by college students in the first semester of German. The course was taught to develop ability to read German with ease and pleasure. The responses of the students to the items in the questionnaire were validated by comparison with (a) the total scores earned on the Cooperative German Achievement Test, Elementary Form O, and (b) the course marks earned by the students at the end of the first semester. Of the various items in the questionnaire specifically dealing with methods of study applied to learning German, the statistical treatments indicated those which shed light on phases of studying included. They point to the importance of (a) understanding what

the instructor wants to achieve; (b) mastering each assignment or lesson; (c) working the exercises included; (d) applying the declensions in the exercises; (e) identifying the parts of speech included in each sentence; (f) reading ideas rather than just words after the first reading; (g) reading until the thought comes in German; and (h) studying and understanding the corrections in one's own work.

Conclusions Regarding the Publications

A review of the published literature and the three summaries covering general methods disclosed some trends to be noted. In the recent three-year period reviewed, the number of publications of a distinctly research nature exceeds the number in each of the two preceding periods. Also, a larger number of the recent studies were doctoral dissertations. Fourteen investigations were experimental studies in which intensive use of statistical technics was generally made. Experimentation with teaching on the college level was marked. Methods of teaching the sciences in secondary schools and in colleges received considerable attention. Many investigators dealt with classroom procedures involving various aspects of greater pupil participation. The effects of certain teaching methods on pupils of different types were investigated more widely than in the previous periods. The analysis of the research literature leads to the general conclusion that the recent period has been far more fruitful than the two periods preceding it.

The body of general literature on methods of teaching was as extensive as ever. There was a wholesome tendency in it to cite the findings of research and the summaries of investigations. The many articles including discussions of or allusions to methodologies used in teaching and training the personnel in our armed forces suggest to research workers that, after the war, sources of accounts regarding procedures used and data accumulated should be investigated. The resulting studies should furnish valuable findings especially with respect to methods of teaching adults.

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CHAPTER IV

Psychology of Learning

WILLIAM CLARK TROW

THE SCOPE of the references in this chapter is somewhat more restricted than in the preceding review (102), for which the title "Educational Psychology" was used as a chapter head. Since this field interpenetrates many of the subjects of special issues of the REVIEW OF EDUCATIONAL RESEARCH it was decided to include here those aspects of educational psychology dealing with learning, which could be viewed as acquired changes in the behavior probabilities of an individual brought about thru a definitely controlled environment. Learning studies were selected only if they were broader in their implications than any one academic field, and only when they emphasized the role of the learner rather than that of the environment, whether physical or social, instructional or clinical. As a consequence, it is believed that a number of studies, analytical as well as experimental, are here reported without trespassing too much on fields marked out for other issues.

A few volumes of interest to the student of learning have appeared. *The Psychology of Human Learning* by McGeoch (56) was published posthumously and provides a descriptive and critical account of various phases of learning. While the greater portion of the volume is taken up with an exploration of serial memorization, the earlier and later chapters deal with many problems and generalizations closely related to classroom experience. *Man and His Works* (98) contains the gist of Thorndike's psychology, including his more recent work on the specifications for a community which make for general goodness of life. The ten chapters constitute the William James Lectures given at Harvard in 1942. The Forty-first Yearbook (34) presented authoritative statements of the basic theories of learning—conditioning, connectionism, and field theory. The contributions, particularly those by Gates, Guthrie, Hartmann, Hull, Lewin, McConnell, and Sandiford reveal that the theories have much in common and much that is significant for education. Other chapters deal with motivation, (Ryans), emotional behavior (Anderson), practice (Stroud), language and meaning (Horn), problem solving (Brownell), and the curriculum (Buswell). A number of chapters relating to various aspects of learning are to be found in the two-volume treatise edited by Hunt (41), particularly those by Bateson, Guthrie, Mowrer, Murphy, and White.

Bibliographies and reviews of research for the field of learning as a whole should likewise be noted before turning to reports of specific studies. Ryans (81) reviewed the researches in learning with especial significance for education which appeared in six journals during the years 1936 to 1940, and selected references on educational psychology are presented by Buswell and Sherman (12). Twenty-six studies in the psychology

of learning, which he considered especially significant, were reviewed by Munn (61).

Motivation, Fatigue, and Aspiration Level

Motivation, as such, was less a problem for investigation than a theme for discussion and general enlightenment. Various aspects of motivation and incentive were treated in some detail by different writers in discussing civilian morale (105). However, the effectiveness of praise or blame as an incentive was shown as a result of a detailed and carefully controlled experiment (85), to be dependent in large measure on the test situation and the tester.

The effects of failure received some attention. Interrupted tasks, those completed correctly, and those resulting in failure (poorly done), consisting of peg puzzles, mathematical problems, and jigsaw puzzles, failed to show the expected differences on attractiveness preference ratings by the subjects, tho failure tasks were generally rated less attractive (14). Experienced teachers will recognize some of the common and seemingly normal characteristics of pupil behavior in an experiment in learning card sorting. The high-school seniors who served as subjects were observed when they succeeded and when they failed. Among the effects of failure were the following: (a) a decrease in general motility level, sharp increase in daydreaming, reduction of social responsiveness; (b) dogged but ineffectual continuation of the task or persistent, nonadjustive behavior; (c) a process of "decontextualization," which splits off the activity from its social frame of reference and reduces its contact with reality (87). Nonpromotion as a consequence of failure was critically examined and found on every count not to benefit the child (83).

Mental fatigue, in terms of reduced efficiency in solving problems, was greater in homogeneous than in difficult but heterogeneous work for subjects of normal and of superior intelligence (62). The psychological effects of doing a monotonous task were explored, using preschool children and college sophomores as subjects, who were required to draw "moon faces," *ad nauseam*. While both groups demonstrated similar postural and vocal patterns and sought substitutions in the form of fantasy, talking, and whistling, the children satiated sooner, introduced more profuse and elaborate errors and distortions, and found it harder to mechanize the task and substitute motor or ideational activities (11). Bartlett (2) made a significant observation in pointing out that fatigue in skilled work cannot be measured as if it were the same as simple muscular fatigue since the operations involved are marked by complex, coordinated, and accurately timed activity. Hence right actions may be performed at wrong times. The stimulus field splits up and becomes a collection of unconnected signals for action, and serious lapses of specific reactions occur.

Considerable interest is now evidenced in the nature and effects of aspiration level. Clearly, low levels, if they are the highest a pupil can attain, need to be dignified so that he will not set his aspirations on the

phantasy level and forever be doomed to disappointment. One experiment (42) combined an interesting motivation differential with aspiration level. Motivation in dart-throwing, based on expectation that scores would be made public (vs. information that the subjects were "just practicing"), produced no significant differences in the scores of university women. Significant differences were found, however, in the level of aspiration as compared with scores actually made when the directions were shifted from a statement of hope to expectation of attainment. Three levels of aspiration were defined for an experiment (72) using addition and cancellation: the "maximum"—that performance which the subject considered to be the best he could achieve; the "actual"—that which the subject expected to equal on the next trial; and the "least"—that below which the subject was certain he would not fall. Correlations of the "least" with the others were negative, while those between the "actual" and the "maximum" were positive (.45 to .84). Festinger (23) subjected a group of college students to synonym-antonym information tests, and obtained their aspiration level for the next test in various ways: reality-irreality—the score they would "expect" and the score they would "like"; group—comparison with a high school, college, or graduate group; and position—comparison with the group average. Shifts in aspiration level were related to the strength and direction of the driving forces, the restraining forces, and the potency of certain frames of reference, an operational definition of which was derived. Rotter (79) in a study reported in three parts examined the effects of variation in the technics of studies on aspiration level, particularly the phrasing of instructions. He set up an experiment in which a steel ball was propelled along a wooden groove with a short cue to the middle of a series of regularly placed depressions. Significant group differences were found, and he concluded that such personal traits as feelings of inferiority and emotional instability do effect the level of aspiration, and that differences in the level are due more to patterns of factors than to specific factors. On the basis of earlier experiments Sears (86) concluded that the aspiration level response forms a part of a cluster of associated personality attributes, and Wren (110) found that vocational aspirations were related to dominance, familial occupations, certain abilities, education, and income but not to age, marital status, employment stability, and length of supplementary education.

Sensorimotor Learning and the Acquisition of Motor Skills

A number of experiments throw light on the processes involved in sensorimotor learning. In a symposium on physical fitness (8) experimental biologists reviewed the influence of psychological factors involved in motor performance, including efficiency, boredom, and fatigue. The proper length and distribution of rest periods has long been a matter of uncertainty. One-minute trials for a period of twenty-five minutes a day (using the Koerth pursuit rotor) produced little difference in daily im-

provement when rest periods distributing the learning were varied in length and frequency with different student subjects (36). A similar experiment (4) indicated that the rest periods were of value at first, but loss did not follow increases in their length. It was proposed that "true learning is obtained learning plus the difference between interference and warming up."

Experimental results favored specificity in widely differing situations. It seems to be the rule, for example, in carelessness. In such closely comparable tasks as reproducing lines 100-110 mm. in length, and canceling A's, S's, B's, and K's, Thorndike (99) reported that the correlation between the scores, the individual differences in which represented carelessness, was less than .30. Trait specificity was also supported by experiments in which practice was called for in block-packing, steadiness, speed of movement, slow movement, stick balancing, tapping, and card sorting in which intraindividual differences were greater than interindividual differences (68). Junior high-school boys were given equivalent tests (67) to determine whether the curves tend to converge, diverge, or maintain the *status quo*. The latter proved to be the case, thus confirming other studies which indicate a "genetic determination and uniqueness of motor skills," and point to the desirability "of early specialization along the lines of the individual's greatest aptitudes" in motor skills.

A few interesting experiments have been reported involving improvement in athletic skills. Retarded speed until a high level of accuracy was obtained was found to be less successful in developing both accuracy and momentum in what was called the ballistic movement. In batting a ball, in an experimental setup, the use of speed from the beginning of the training period was more effective (25). Improvements in speed and accuracy of total bodily movements were studied by analyzing the fencing lunge from the point of view of initial status, rate of learning, and maximum end points (21). In an unusual experiment involving junior and senior high-school boys and college freshmen (103) "mental practice," in which the subjects imagined themselves dart-throwing and basketball-shooting, was almost as effective as actual practice.

Memory and Forgetting

A variety of experiments on retention followed no well-defined pattern. Using the familiar, paired-associates technic Stroud and his collaborators (93, 94) found, contrary to expectations, that over a period of two weeks recall trials did not prove superior to presentation trials, and that reviewing by rereading was equally effective one day, fifteen days, and twenty-nine days after learning. Attitudes were found to influence recall on a paired-associates test composed of items of various degrees of compatibility made out for each child. The pairs at either end of the attitude scale were retained with greater success than the indifferent items in the center, but items in the control series, consisting of incongruous pairs, were retained better than in the test series (70).

A larger number of massed than of distributed repetitions of readings of poetry by 150 college students were needed for learning, tho the total elapsed time of the latter was pointed out as an important consideration in over-all efficiency (10). The part method likewise proved superior for four graduate students in memorizing piano music (64). In reading piano music a photographic study of eye movements showed that memory span and duration of reading pauses were influenced by the complexity of note relations, and by melodic and rhythmic factors (104). Growing complacency with the conflict theory of forgetting as opposed to that of fading or disuse received a jolt from the Columbia School of Investigators (7). Three subjects were trained to draw 150 lines, blindfolded, three, four, five, and six inches in length, and then made the same drawings after varied periods of time up to eight months. The average percent of error increased as a function of time.

Three articles containing discussions of experimental findings should perhaps be mentioned. The difficulties some have had in applying the technics of negative practice for unlearning bad habits were explained by the author (20) of the gamma hypothesis. Buxton (13) reviewed the literature on reminiscence, which is defined as an improvement in recall without practice after original learning. The phenomenon is apparently widespread and related to various aspects of the learning task. In most of the memory experiments of the past, emotion has been one of the variables which were supposedly controlled. It has become increasingly evident, however, as pointed out by Rapaport (74) that in the actual processes of remembering and forgetting, emotions are very important. Evidence of the part they play was gathered not only from psychological theory and experimentation, but also from contributions of psychoanalysis, hypnosis, and pathological memory phenomena.

A few studies in retention were reported which were conducted in the school situation. Two hundred twenty-nine ninth-grade algebra pupils forgot 10, 20, and 20 percent of their fundamental operations four, eight, and twelve months later respectively, but gained 2, 5, and 10 percent in problem solving, which latter may or may not have been due to their concurrent practice in geometry during the year (48). The facilitating effect of an audience on remembering was demonstrated in the case of college students who, in retelling a story to a group, recalled more ideas than when retelling to the experimenter (32).

Associative Learning: Set, Effect, and Transfer

The term conditioning has been used loosely to apply to all associative learning and even to learning in general, and Maier and Schnierla (57) have done well to call attention to this and to urge that conditioning be restricted to apply only to the first stage of associative learning, the development thru contiguity by a neutral stimulus of power to excite, a response it previously did not control.

Since the pioneer experiments of Bryan and Harter, psychologists have done relatively little with the Morse Code. Taylor, after further explorations, found among other things that speed of learning to receive was unaffected by whether similar or dissimilar letters were taught together, whether the instructor transmitted individual characters at high or slow speeds, or whether correct responses were reinforced immediately or after a short delay. He also concluded that plateaus were not common in curves of learning to receive, and that the negatively accelerated curve was typical of learning to send.

The concept of set, which has an important bearing on educational theory and practice, historically in Herbart's "preparation," and concurrently in questions of motivation, need, and in lesson assignments, was critically reviewed by Gibson (26), who found a number of false assumptions and ambiguities in the use of the term. The importance of specificity in set was revealed in an ingenious experiment (30) in which subjects who were told that a light would move during most of the trials perceived movement more frequently than did those instructed that movement would occur in only some of the trials. A set developed by the subjects, in finding that the solution for several successive problems lay in a procedure common to all, was viewed as created by special factors in the situation as a result of intelligent assumptions (55). A motor set was introduced by an ingenious procedure (77). Subjects who had established a reliable tapping rate were asked to return to it after faster and slower rates had been forced on them; but they were so influenced by the intervening experience that in all cases the natural rate changed in the direction of the forced rhythm.

The "pep talk" is in for a doing over, if Yates' success in "psychologizing" five out of six amateur boxers into winning can be repeated (111). The desired set was provided by creating the conviction of success, showing the subject how to relax, presenting "slogan-like" ideas, following the set by rest or sleep, and providing the occasion for success quickly. The old game of gossip was thrown into experimental form (101) by having a subject write a passage that had been read to him twice. What he wrote was read to another, and so on. After twenty or thirty individuals had passed the word along, the changes were found, as expected, to follow such principles as simplification, trend toward familiarity, rationality, etc. But when a set had first been established by the reading of allied material, the changes occurred in a definite direction.

Direct educational implications for the use of reward and punishment were indicated in the results of an experiment with a punch maze, using children six to ten years old as subjects (37). In one series a bell was rung when each hole chosen was wrong; in a second series the bell was rung only when each hole chosen was right. The reward or positive guidance was superior for the group as a whole, for all ages tested, and for all four maze lengths used. The effect of knowledge of results in training in pitch discrimination (two and one-half hours on five successive days) was

to produce marked improvement, particularly in those initially poorer (17). The effect of reward and punishment in perception was discovered in an ingenious experiment by Schafer and Murphy (84). They employed cleverly drawn ambiguous figures, each containing two facial profiles which had previously been viewed twenty-five times separately, accompanied either by a monetary reward or penalty. They found that four-fifths of the perceptions were of the hidden profile that had previously been rewarded, thus indicating that autism, "the organization of cognitive processes in the direction of need satisfaction," plays a role in figure-and-ground observations. Punishment was likewise found to come off second best in an experiment (5) with college students employing a stylus maze and a verbal maze. Shock was administered for some but not for all of the errors, and those for which it was administered were not eliminated any more rapidly than the others. In fact, some of the shocked errors persisted longer. The phenomenon of spread of effect obtained for reward was confirmed in an experiment (22) with a punchboard maze, and the effect of punishment in the opposite direction was shown to be not comparable in amount with that of reward.

Educational psychologists have for some time interested themselves in "transfer," in the facilitation of or interference with a performance produced by previous more or less related training. But educators should perhaps be equally concerned about confusions wrought in performances earlier acquired, by later experiences, which goes by the name of retroactive inhibition. Hamilton (31) went to some pains to show that the later task interferes with the one earlier completed if the responses called for are different, but that retroactive facilitation takes place when the responses are identical. In a detailed review of the literature on retroactive inhibition, Swenson (96) concluded in favor of a transfer theory elaborated in terms of "organizational and meaningful features that cause or prevent positive and negative transfer, rather than purely in terms of identical elements. Conditions contributing to the construction of well-organized patterns of knowledge and skill are those for which retroactive inhibition is at a minimum." Implications for education were emphasized. In an experiment (95) involving 332 pupils from fourteen different second grades who were taught 100 number combinations, she found that those taught by a generalization method seemed to have an advantage over those taught by drill, or by a common practice method.

The progress in learning made by students from progressive and from traditional schools was reported by Aikin (1), by Chamberlin and others (15), and by Smith and others (90) in Volume III of *Adventure in American Education*. Pressey (71) and his co-workers in a number of studies showed that the usual slow progress thru school and college is unnecessary and wasteful, and that accelerated groups, merely by taking "extra subjects" made a better scholastic and extracurriculum record than equivalent groups taking the usual time, or a longer time, for college graduation.

Problem Solving, Concept Formation and Critical Thinking

A detailed analysis of the processes of problem solving was presented by Johnson (46), who cited a bibliography of 169 titles. The solutions arrived at by a group in which a problem was discussed were found to be superior to those of another group where it was not. A number of factors were suggested to account for these results: the increased range of suggestions, the criticisms they received, varied interpretations of the facts, and the larger fund of information available (100).

Piaget (70) reported an analysis of the development of the number concept in children, and his work has been at least one of the sources of stimulation for other workers in this field. Long and Welch, following Mill's joint method of agreement and difference in inductive reasoning, found that those who were able to give adequate verbal explanations on picture block tests did better than those whose explanations were inadequate (106), that qualitative changes (shifts in the abstractness of concepts) were particularly effective in reducing the score (53), that difficulties increased in passing from the first to the higher levels of abstractness (objects, species, classes), and that better progress was made by those who discovered the first principle without any hint (54). Goldstein and Sheerer (29) concluded, on the basis of various testing procedures, that abstract thinking includes, in addition to the "real" stimulus, such modes of behavior as assumption of a mental set, shifting from one aspect of a situation to another, holding in mind simultaneously various aspects of a problem, abstraction of common properties, and planning ahead ideationally. Eight lesson units aimed at giving instruction in critical thinking were tried out on 129 high-school seniors over a ten-week period and resulted in significant gains over the control group, as measured by the Watson-Glaser Tests of Critical Thinking, and by evaluations by students and teachers. Results indicated that improvement in critical thinking ability was general for the individual, but skill in formal reasoning was specific to the field of training (28).

A somewhat different approach to the problem was tried by Cronbach (18), who prepared a checklist of 120 considerations which might be important in the formulation of the reasons for the choices of college students between the two major candidates in the last presidential election. In many cases checking of invalid arguments pointed to inadequate patterns of thinking. A statistical formulation of logical concepts was advocated by Dodd (19) in the interest of greater precision. Induction was then operationally defined in terms of statistical formulas, deduction as correlation indexes, the syllogism a primitive special case of the regression equation, and causation in terms of time sequence and correlation formulas.

Strauss and Werner (92), continuing their studies of brain-injured children among the mentally retarded by means of object and picture tests, found that the brain-injured selected more objects, showed more uncommon responses, seemed to depend on unusual, accidental, or apparently

insignificant details, and were attracted to items apt to elicit motor responses. In addition (108) they elaborated on details, changed the meanings of objects to suit their present associations, and passed far beyond the given situation in space and time. Their performance was erratic and uncontrolled because of their excessive fluidity of associations and their readiness for assimilating unrelated materials. When asked if various objects were living or dead, the brain-injured children were less able to differentiate between persons and things. They more often gave animistic responses, reasoned from human situations, and attributed conscious activity to objects (107).

Russell (80), in the fifth of a series of studies of animism, reported the results of giving a paper-and-pencil test to 611 pupils in Grades V to XII. Classification of the subjects into one or another stage of development on the basis of their written answers and reasons revealed that the percentage of cases in the adult stage increased with MA and CA and at the eighteen- to twenty-year level. Experiments dealing with children's ideas of causality showed that these ideas were determined by age, intelligence, and the cultural milieu and that they were more often naturalistic than animistic (38). A record for confusion in concepts, when they appeared in a verbalized ritual, was chalked up by Olander (65) in a study of the amazing interpretations of elementary- and high-school pupils of the salute to the flag. Hildreth (35) emphasized the importance of the so-called "difficulty reduction tendency." This is the tendency to interpret new concepts in terms of one's own limited experience, and is found, unfortunately, at all levels of mental maturity. This scheme for simplifying problems needs to be guarded against, since it accounts for many errors in thinking, by making sure that children are mature enough to comprehend the problems with which they are presented, and that adequate explanations are given.

Differences in adolescents' abilities in abstract and in critical thinking in practical behavior situations were found to be related, not to interests or emotional conflicts, but to the "purpose score," i.e., the presence or absence of a well-formed plan and an appreciation of careful work in reaching a goal (9). Attitudes toward conclusions reached were found to produce more errors in judgments of the logical validity of syllogisms when the subjects agreed with invalid and disagreed with valid conclusions than when they agreed with the valid and disagreed with the invalid (43). The conative aspect of thinking was developed by Wolters (109), and concepts elaborated by Head, Bartlett, and Wolters were critically examined by Oldfield and Zangwill (66).

Social Learning: Attitudes and Delinquency

Studies of learning in social situations dealt primarily with attitude changes and the treatment of delinquency. Newcomb (63) found that social attitudes moved to the less conservative side during college, but remained constant for several years thereafter. Little relationship was

found between attitude change and the course of study, and Hunter (40), reporting similar results, found there was no change in attitudes on religious questions. The influences of high-school instruction were likewise studied. Pupils in an eleventh grade who had taken science were found to be no more able to ignore their prejudices on certain controversial issues than pupils who had not been so instructed (27). But, after a course in principles of secondary education fifty college juniors showed a shift in attitude in the direction of the best educational opinion, particularly in the areas of the curriculum and formal discipline (76). The value of instruction, as such, is, however, called into question by a study in which pupils of liberal teachers tended to become more liberal, and of conservative teachers more conservative, the most influential teachers being those who rated themselves as believing most in the pupil's right to his own convictions (57).

Actual experience has been found to be effective in the modification of attitudes. Twenty-six members of a seminar on social problems, involving a week-end roundtable conference and a field trip thru eastern and southern states with supervised visits to various communities and progressive schools, showed an increase in liberalism over their controls, tho both groups had developed greater conservatism three years later (6). Attitudes of forty-six college students toward the Negro improved after they were exposed for four days to social and intellectual contacts with leaders of Negro Harlem (91). A gradually developing understanding of the democratic process was reported as one of the results of an attempt by adolescent girls in an institution to set up a system of self-government (44). Eighty-three delinquent eighth- to tenth-grade girls did not differ from their one hundred nondelinquent controls in attitude toward war, on the Thurstone scale, but showed a more favorable attitude toward Sunday observance and the Bible (59).

The influence of careful instructional technics has been studied. Prestige suggestion, in the fourth of a series of papers by Lewis (51), was found to be ineffective in changing the attitude toward political slogans, except when the purported ratings by either a popular or unpopular figure served to place the slogan in a new light. The most detailed instructional procedure was followed by Rhinehart (78) in a direct attempt to modify social behavior. The children of 500 families, enrolled in a five-year cooperative program to inculcate correct dietary and sleep habits, and provided with trained leadership in play and recreation, improved in dietary and sleep records, social development, character growth, emotional adjustment, and home attitudes. Categorizing social behavior as domination, cooperation, and nonassertion, Chittenden (16), using a doll-teaching technic found that dominating preschool children, unlike their controls, moved significantly toward the cooperative category. Camping over a two-weeks period resulted in reliable gains for the older boys on the Washburne Social Adjustment Inventory, while younger boys showed no changes

on the Rogers Test of Personality Adjustment; but on the latter instrument eighteen underprivileged boys showed a loss (33).

The roles of the central person or leader, around whom group formative processes take place productive of "group emotion," were identified by Redl (75) as the patriarchal sovereign, leader, tyrant, love object, object of aggressive drives, organizer, seducer, hero, bad influence, and good example. Mediocre leaders were retrained to become efficient democratic leaders by changing their attitudes and technics (3). The process of retraining an autocratic leader using role-playing as a method was described by French (24) with the use of case material. Some of the problems and technics of group therapy do not differ widely from many in the field of learning and teaching, as illustrated by Slavson (89), who indicated that the main task of group therapy is to overcome emotional "encapsulation," the resistance to the world and to the people who may have a helpful influence. The literature of group therapy was reviewed by Thomas (97).

The psychodrama, a new technic for acquiring an appreciation of social interrelationships, was shown by Lippitt (52) to be useful in leadership training, by Shoobs (88) to decrease truancy and other antisocial behavior, and by Zander and Lippitt (112) to inculcate performance skills and basic attitudes in addition to factual information. Its theoretical aspect as "role-taking" was analyzed by Sarbin (82), and was defined by Moreno (60) as deep action method dealing with interpersonal relations and private ideologies, in contrast with the "sociodrama" which deals with intergroup relations and collective ideologies.

Two reports on reeducating delinquents may perhaps be justifiably juxtaposed, one American and one British. In the American report (73) seventeen out of twenty-one institutions for delinquent boys used corporal punishment, fifteen reporting it as a substitute for psychological and psychiatric service which they would prefer but could not afford. According to the British report (49), youths treated under the Borstal system rated fourteen factors responsible for the benefits they had derived, placing the first four in the following order: the housemaster, the work, the officers, and the discipline.

In a five-year follow-up study it was found that those influences most evident in the causation of delinquency were also the most detrimental to the successful application of probation, e.g., defective home discipline, opposing temperamental traits, lack of definite interests, and unstable employment (39). Recidivism of ten- to twelve-year-old delinquents was reduced over a three-year period by helping each child to fulfil his needs in nondelinquent ways thru play materials, school placement, contact with a recreational center, part-time employment, and reeducation of parents (50). The fact that 61 percent of the first admissions and 78 percent of the recidivists showed truancy as the first offense was interpreted as evidence that failure to meet classroom standards of behavior in elementary schools, leading to truancy, is a cause of crime (45). To test this hypothesis,

Kvaraceus (47) compared a sample of 761 delinquents over a five-year period with nondelinquent controls with the following results (delinquents being mentioned first): IQ—89, 103; repeated one or more terms of school—44 percent, 17 percent; truant—34 percent, 6.8 percent. Sixty percent of the delinquents expressed dislike for school and its associations, and there was a marked falling off in delinquency when the schools closed for the summer.

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CHAPTER V

Auditory and Visual Education

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TWO SEPARATE chapters were given over to the consideration of teaching aids in the June 1942 issue of the REVIEW OF EDUCATIONAL RESEARCH. Chapter VI dealt with "Radio and Records in Education"; Chapter VIII summarized investigations concerned with "Visual Aids in Education." In light of the development of the field of instructional materials and equipment, such a separation now seems both artificial and undesirable.

The commonly used term "audio visual" shows that very often the two merge into a single teaching device. Records are used with slidefilms to make possible the sound slidefilm. The sound motion picture provides pictures and sound track on the same piece of film. Television, tho still largely undeveloped as an instructional medium, adds a visual aspect to radio.

Then, too, there is a large mass of instructional materials in which the appeal to the sense of touch is equal or greater than that of sight. Teaching aids of olfactory nature have been used in training air-raid wardens to recognize the smell of different poisonous gases, and the future may see the school making increased use of devices of this nature. Categorizing these types of instructional materials separately tends to make the teacher consider them as unrelated aids to instruction which are competing with each other for acceptance and wider use, a most undesirable concept of the philosophy of the field.

Research by the Armed Forces

It is probable that the most important research work in the field of instructional aids during the past triennium has been done by members of the armed forces. Certainly, the Army and Navy have extended the use of training aids further than any other organizations, and likely, an evaluation of the work done has been made. Unfortunately, however, there is practically nothing published in regard to such research.

It is not difficult to find an Army or Navy release (54) making such statements as "Tests show that students learn up to 35 percent more in a given time" when training aids are used; or that their use results in "facts learned are remembered up to 55 percent longer." But such bald statements are all that the reader is given. Just how it was discovered that trainees learned "35 percent more" is not stated. Whether the findings are based only upon an individual officer's opinion, or on carefully worked out evaluation studies cannot be ascertained now, because studies so far have not been reported in sufficient detail. It would be neither wise nor fair to judge the validity of the findings at the present time. It is to be hoped that a thoro evaluation program has been carried out by those in charge of the work. If such is the case, then the future development of teaching

aids and technics in their use should be directed to a considerable degree by the findings of the armed forces.

Noel (35) stated that a definite evaluation program is a reality in the Navy. "This work covers evaluation in its broad aspects and will be pertinent to production, distribution, utilization, and curriculum." He added that altho no announcements could be made then, "when the proper time arrives, educators will receive the information."

Lack of Significant and Pertinent Research

Altho the last three years have seen a tremendous increase in the interest of educators in teaching aids, especially visuals and FM broadcasting, neither the development of the field nor the use of materials in the schools has been extended. This fact is due in a very large measure to the war and the restricted manufacture of equipment for civilian use. Research in the field has reflected the status of the program in the schools. There has been no continuous pattern of investigation. For the most part, studies have dealt with specific problems in a rather superficial manner. It is not difficult to match every investigation that has proved that the use of visual or auditory aids resulted in increased instructional effectiveness with one that has shown no added benefits to pupils. And even on points where the results of research have been fairly consistent, study has not always been on currently vital problems.

One of the most apparent needs in the field is additional investigation of specific aids and the functions that each performs best. Clark (7) held the school excursion or field trip to be important in the development of interests, ideals, and appreciations in students, but of little value in the acquisition of factual knowledge. Cypher (9) concluded that the diorama was a valuable teaching aid with limited use at present but with a bright future. Goodman (15) in a comparison of motion pictures and slidefilms, both sound and silent, found the silent motion picture to be the most effective medium of the four in teaching a unit of work, and the sound motion picture the least valuable. These minor and limited studies only emphasize the need for additional investigation.

Availability of Equipment and Materials

Since 1941 there have been several surveys made to determine what equipment and materials were available to the teacher and their acceptance and use. Findings were drawn from visitations and questionnaires, and the scope of concern ranged from single cities to all the Latin American countries. Larson (28) on the basis of his investigations estimated that there were 15,000 sixteen millimeter projectors in the schools of this country. In cities of more than 100,000 population, he stated that 4.6 projectors were available per 100,000 population. Goodman (13, 16) reported on separate studies by Mears and McPherson. The former, he said, found few, if any, schools in Texas with sufficient access to films or visual aids equipment to maintain an effective visual instructional program. A study of California's school districts by the latter resulted in his recommenda-

tion for more centralized visual services, probably on a state support and service basis, because the rural schoolteacher was seen to have little chance for using visual aids. This same disparity between equipment in city and rural schools was found by Ritchie (40) in British Columbia. The suggested plan for increasing availability of material, however, was that of having several school districts pool their funds and share equipment and films.

McCarty (32) stated that 115,000 school children listened more or less regularly to the Wisconsin School of the Air broadcasts. Three thousand schools in the state were listed as listening schools, 62 percent of which were state graded schools. Gilburt (11) found, however, that in approximately six hundred elementary and eighty-two junior high schools in New York City radio had not yet been unveiled in spite of the fact that about 83 percent of all American homes have a radio. Chapman (6) surveyed the various state departments of instruction by questionnaire and learned that only three states have a full-time person responsible for educational broadcasts, and that only four states offer classroom broadcasts as a part of the program of the department of instruction. Ten of the thirty states that replied stated that they did nothing in the field of educational radio.

Several investigations published during the last three years treated the organization, equipment, and practices concerned with audio-visual education in the schools. Most of these studies gave no conclusions except as the presentation emphasized services and procedures that were found to be especially effective. Seaton (49) visited six representative cities and studied their programs intensively. Recommendations which she drew from these and other sources are commented upon in the concluding portion of this chapter. Molyneaux (34) gave a detailed account of current practices in audio-visual education in twelve school systems of the United States. Sechriest (50) studied the visual program in thirty-eight cities of between 100,000 and 500,000 population and found little supervision of this phase of the school system's program. Equipment was found to be varied in quantity, but limited in type. Atkinson (1, 2, 3, 4) reported on educational broadcasting by the major networks, public-school systems, and institutions of higher learning.

The status of visual equipment in the Latin American countries was considered by Golden (12), and a forecast was given of the future of the program. Stenius (52) visited ten European countries to investigate educational broadcasting and presented a comprehensive overview of conditions as they were immediately before the war. Gray (19) limited himself to consideration of the use that Germany, Italy, Japan, and Russia had made of the radio and motion picture as an educational force and suggested certain forward steps for increased use of these agencies of communication in this country. Several of his suggestions were similar to those made by the British Film Institute (53) to correct the six principal difficulties holding back the visual education program in Great Britain.

Effectiveness of Instructional Aids

In the June 1942 issue of the REVIEW OF EDUCATIONAL RESEARCH, Reid and Day (39) stated that studies concerned with a comparison of radio and nonradio learning were inconclusive. In the same issue, Kinder (27) reported that research had failed to give definite proof that learning with visual aids was more effective than without them. These two statements are still appropriate. Many additional studies were made during the last three years attempting to determine the effectiveness of auditory and visual aids, but still little significant progress can be observed.

The separate studies that have been made are, for the most part, inconsequential. Individuals have worked with groups too small for findings to be meaningful except in the specific situation concerned. Investigators have seemed more anxious to justify a belief of their own, to work along the line of a personal interest, or to limit experimentation so that it might fit within the framework of their local teaching situation, than to make a meaningful contribution to the research of the field.

Some of the best research studies published during the last three years were those presented by the staff of the Evaluation of School Broadcasts study at Ohio State University. A large portion of these reports which were published in 1942 were included by Reid and Day in their June 1942 chapter of the REVIEW OF EDUCATIONAL RESEARCH because the actual research had been completed and first drafts prepared in 1941.

Recordings and Transcriptions

Lowdermilk (31) used transcribed radio broadcasts and found that dramatic programs do affect social attitudes of student listeners, but that reading printed program adaptations also proved to be effective. Students appeared to regard materials presented over the loudspeaker somewhat less critically than they did the material they read. Miles (33) used supplementary recordings in science classes and learned that while interests in some aspects were heightened by the records, the students' breadth of interest was decreased. Students of Spanish showed definite increase in oral comprehension when recordings were used, according to Goudy (18), and transcriptions also proved to be a good stimulus to further study. The latter point was substantiated by Bathurst (5) and Hockman (24).

Studies made by Rulon (44, 45, 46, 47) resulted in findings opposite to those just mentioned. Recordings were found to be of little value in motivating students to further study, and failed to exhibit any superior effectiveness in the teaching of informational material. A slight shift in attitudes was achieved by the use of recordings, but the results were in no way conclusive. In general, Rulon's studies showed that there was no sound basis for the popular belief that today's radio-minded youth learn best thru the ear.

These investigations reported by Rulon were based on the reactions of several groups in different parts of the United States. The pattern used in determining the value of recordings alone in presenting factual ma-

terial serves adequately as an example of the method used. "The Sound of History—Then Came War: 1939" was the set of records listened to by those groups with whom an auditory experience was the basis for acquiring information. A playlet, developed from a typescript of the records and containing almost identical verbal content, was the reading material which other matched groups used for gaining their facts. The greatest difference between the recorded and written material was that sound effects were heard in the former and only called for in the latter.

Two groups of students in each of seventeen representative high schools thruout the country participated in the study. Equal time was given to listening and reading. Three parallel objective-type tests were used to determine the gain of factual information. The first test was given before the records were played or the material was read. The second test was given immediately after the listening and reading experiences; the third check was made a week later. Altho the three tests were not identical, they were of equal difficulty and scope. To validate this part of the testing program further, one-third of the pupils in all classes received each form at each one of the testing periods. Teachers participating in the investigation were given detailed instructions which left little or no room for individual interpretation. Instructions to students were read by the teachers.

The groups which studied the playlet showed statistically significant, immediate gains in factual knowledge. After a week's time, however, the superior gain was reduced practically to disappearance. Rulon ventured an opinion that if a fourth test had been given several weeks after the listening and reading experiences, the listening group might well have shown the greater retention of information.

Visual and Audio-Visual Aids

Findings of experimentation to determine the effectiveness of visual materials have been somewhat more consistent than those dealing with auditory aids, but results are in no way conclusive. Holland and McDaniel (25) in an experiment with Latin American students who were learning to read found that visuals permitted those experiencing them to excel a control group by about 20 percent in quickness and accuracy of word recognition and in constancy of progress. Lockhart (30) investigated the value of motion pictures in learning a motor skill and stated that they proved effective for such a purpose. Eight teachers working with slow learning pupils under the direction of Vauter (56) learned that handmade slides permitted the less able students to score almost as high in subjectmatter and retention tests as high intelligence children did without the slides. When Schmidt (48), however, compared auditory and visual presentation of learning materials to a group of retarded readers, 33 percent of the pupils showed a decided preference for the auditory presentation, the preference being strongest with the slowest learners. Deaf children, Purdy (38) pointed out, received little from motion pictures unless they had a complete working vocabulary used in titles and were prepared to watch for certain items in the films.

Halbert (21) worked with three groups to study the value of illustrations in accompanying reading material. She found that reading a story with pictures gives a child a better concept of content than either reading a story or looking at pictures alone. For stimulating and arousing ideas not directed toward some specific goal, pictures alone were found superior.

Wittich (60) compared three methods of use of classroom films to determine which gave the greatest acquisition of factual knowledge and social understanding, and also to learn the extent to which intelligence and reading ability influence a child's ability to gain information from educational sound films. The first method had the children see the film after having anticipated the film only in the course of casual and organized classroom work, and immediately after seeing the film respond to a test. In the second method the pupils read a brief story-like setting about the film, studied words and phrases necessary to understand the sound track, read questions which anticipated the large areas of information in the film, and responded to a test immediately after seeing the film. The third method included all of the second and added, twenty-four hours later, oral discussion of a prearranged set of questions based on the film, rescreening the film, and taking the test a second time. The average time spent by groups in each of the three methods was thirty-five minutes under method one; forty-five minutes under method two; and ninety minutes under method three.

Wittich's conclusions were that the level of performance under method three was virtually double that resulting from the first method, and method number two showed approximately a 50 percent improvement over method one. Significant gains, however, resulted from all of the three methods. The more difficult the film, the more effective became methods two and three, and both high and low intelligence children were motivated similarly and in comparable amounts. Methods two and three also produced an increased homogeneity of performance. In general, the study proved the definite worth of using adequate anticipatory teaching technics with educational sound films.

In an attempt to investigate elements of films themselves, Goodman (17) stated that Sturmthal and Curtis studied the reactions of audiences and concluded that the visual elements of a sound motion picture are more important than the sound. Park (36) studied the vocabulary and comprehension difficulties of pupils with sound motion pictures and concluded that a class's interest in a film is closely related to the mean vocabulary of the film. Long sentences in the sound track resulted in a decrease of comprehension by the pupils.

One assumption and recommendation may be drawn with validity from the inconclusive findings which have been summarized in the last few paragraphs. Because instructional aids are tools to be used by the teacher, and not intended to do the instructional job by themselves, the teacher himself becomes a very large factor in any investigation of their values. When John Doe, therefore, uses certain films in teaching a unit of work,

he is apt to get different results than another using the same materials. Yet, the films are intended as a tool for the teacher to use, and determination of their effectiveness without a consideration of how he uses them is of little value. What appears to be needed is further study in which greater attention is given to the teacher as a variable factor.

Museum Materials

A phase of the instructional aids program which may develop to a considerable degree after the war is that often referred to as museum service. The armed forces have made much use of models, mock-ups, dioramas, and specimens. In most instances, visual education departments have not concerned themselves with these materials, but rather with projected visuals —motion pictures, slides, and slidefilms. In some cities, notably Detroit and St. Louis, flat pictures, models, and realia are furnished to the teacher by the school system's museum department. In many other cities materials of this nature are available to the teacher thru museums separate from the school system.

But the importance of museum service to the schools is not apparent if one judges on the research given over to this phase of the instructional aids program. One major investigation reported during the last three years was conducted in five cities—Buffalo, Chicago, Cleveland, Milwaukee, and New York—and was made possible thru a grant of funds from the General Education Board.

In reporting this study, Powel (37) explained that because the experiments differed in type in each of the five cities, no over-all statistical analysis could be worked out; but all collaborating schools and museums found that students benefited greatly from their introduction to museum materials. Several definite conclusions were reached thru the separate studies. Probably greatest stress was placed on the necessity of schools being built to use museum materials. Optimum benefits from exhibits, pictures, and displays cannot accrue unless a school has a special museum room or other adequate and correct exhibition facilities. Just adding a table or display case to the ordinary classroom or corridor does not make for effective exhibition of museum materials.

It was also recommended that in large city school systems, visual materials of the museum type should be furnished by the school system itself rather than to depend upon an outside organization or institution. With both museum and schools under a single administration, a more effective program is possible. Such an arrangement also permits purchases and services to be based entirely on school needs.

There was no claim to scientific accuracy in evaluating the project. The pattern of investigation used in Buffalo was that of having a teacher serve as attendant and make observations and timings of the responses of students to the exhibitions. In Chicago, teachers and principals were asked to make comments on the program and express their feelings on the value of the project. In Chicago, Cleveland, and New York, appraisal also was

based chiefly on reactions of museum staff members, teachers, and school administrators.

From evaluation technics such as those mentioned, several conclusions were reached. Students found three-dimensional objects somewhat less attractive than two-dimensional material. Pupils did not give enough time to exhibits to absorb the material presented. The means of presenting material was more important in getting attention than the kind of material itself. School museum visits should not exceed one hour. Schools should have picture frames which open at the back so that a variety of prints can be displayed.

Additional studies dealing with museum service which came to the author's attention were few. Only VanFleet's investigation (55) showing that the diorama possesses greater interest values than flat pictures, and Wall's survey (57) of lighting technics in museums of Europe and the United States, were found.

Out-of-school Radio and Motion Pictures

Altho one usually thinks of a school's visual and auditory education program as pertaining to classroom activities, there is little doubt that the greatest portion of a pupil's visual and radio "education" comes from his out-of-school seeing and listening. The movies and radio are tremendous educational forces and must be recognized as such by the teacher, whether their influence, in his opinion, is good or bad.

Weil (58) studied the listening patterns of 422 high-school boys and found that their listening preferences followed the same pattern as that shown by surveys of adults. If one may reason that the teachers of these boys are a true sample of the adult listening pattern, then the students listen to much the same programs as their teachers. That such a conclusion may have a valid basis can be argued from Robbins' investigation (41), which did not show too great a disparity between teachers and a general sampling of adult listeners. Witty and Coomer (61) checked on both the radio-listening and the motion-picture experience of high-school students and held that the effect that these two media of expression have on today's youth makes guidance of the pupil's leisure-time activities one of the most important responsibilities of the teacher. Looking at radio's influence on youth's attitudes, Rowland (42, 43) found that radio is responsible to the same extent that other channels of communication are, but that radio promises more because it is less firmly entrenched in tradition and a way of doing things.

Gundlach (20) reported that there was only a slight relationship between the popularity of a radio program and children's ability to identify the sponsor, a finding that may tend to allay the fears of some teachers who hesitate to assign "listening" homework because of a program's commercial sponsorship. Children seem able to shed propaganda better than one may think. Programs on the comprehension and interest levels of younger children are scarce, however, according to Crosby (8), and with

rare exceptions their school use is inadvisable on the early elementary level. Erickson (10) held that in-school listening to standard programs was more effective than home listening, but Stadtlander (51) pointed out that pupils could improve their ability to listen when proper help was given them.

Suggestions for Development and Study

Altho the war has retarded the growth of the instructional aids program in the schools, during the last three years educators have shown a heightened interest in the effectiveness gained by use of teaching devices. As might be expected, therefore, much work has gone into planning the school's postwar, audio-visual program. The most intensive examination of future needs was that of the American Council on Education reported by Seaton (49). Altho a study of only six cities acted as a basis for the report, recommendations from a committee of educators in the armed forces and previous investigations of the council were added to Seaton's personal evaluations to set up standards. Tho many may on first thought express the belief that the report suggests an idealistic program (a full-time, audio-visual specialist for every county of more than 25,000 population; a sound motion-picture projector for every two hundred pupils, etc.), study shows the report to be entirely realistic in terms of a functioning and meaningful program.

Hoban (23) summarized work done under the General Education Board's motion-picture project, and tho previous publications have given much of the material reported on, the book is an excellent integrated treatment of the various studies. Admitting that the report was more a discussion of what can be done than of what actually is being done, Hoban concluded that the use of motion pictures in education had hardly been scratched.

Just what motion pictures and other types of instructional aids can do makes a fine area for further study. Goodman's report (14) on O'Conner's investigation stated that sound motion-picture films amount to little more than silent films with lectures. In the films studied, 41 percent of the footage was wasted as far as motion utility was concerned. The material might have been presented on slides as effectively. The inherent element of action that motion pictures possess was not utilized in much more than half the film. Goodman's own study (15) showed the advisability of additional work to determine what contributions sound motion pictures can make that are not offered by other media.

The necessity for making special transcriptions for the classroom was stated by Hood (26). He pointed out that the broad objectives and general audience bias of broadcast programs do not make them wholly suitable for school use. Even programs broadcast especially for schoolroom use were failing to achieve eighteen important objectives according to teachers in Chicago, Detroit, and New York, who were questioned by Woelfel (62). Goudy (18) argued against the reproduction of radio programs on regular phonograph records, because the five breaks necessary to get the usual

half-hour program on twelve-inch discs prevent dramatic build-up and destroy continuity.

The development of FM broadcasting and the planned increase in the number of stations owned and operated by educational agencies promises much. Even tho the schools will have objectives different from those of commercial radio, educators will do well to study how the networks have attempted to judge the nature of the different listening audiences and the effectiveness of programs. Hill (22) gave an excellent overview and appraisal of educational programs for the general listening public which may act as models for educators. Lazarfeld and Stanton's book (29) was concerned primarily with the commercial field, but the gathered reports have valuable implications for those educators who will shortly find themselves in the broadcasting business. The "program analyzer," which was invented by Lazarfeld and Stanton and which was tried by Wiebe (59) on educational programs, is a mechanism and method that seems to have less possibilities for schools for determining the strengths and weaknesses of a program before it is broadcast than such methods as Stenius (52) reported findings in Italy and Switzerland. Before the war, all radio programs intended for use in Italian classrooms were presented over a public address system in a single experimental school and checked for effectiveness; while in Switzerland a multimembered committee received a special "wire" broadcast of programs before they were finally aired for school use.

Conclusion

It is likely that there will be a considerable amount of research in the area of instructional aids in the immediate future. The interest now evidenced in the development of the field will probably crystallize into a desire to understand better the specific job or jobs that each type of aid can do best, and how it may be used most effectively. Seldom-found equipment such as the micro-projector and commonplace devices such as the globe should, and most likely will, share investigation with the motion picture and recordings.

The time has come when we may accept such principles as any teaching aid is more effective when a child is properly introduced to it, and when the teacher does not conclude the "lesson" with turning off the projector or radio. Study on a point of this nature amounts to an investigation of whether an instructional aid is more or less valuable when properly used. Perhaps more profit will accrue if we accept the findings on such points as conclusive and give our time and effort to studying other problems of greater import.

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CHAPTER VI

The Library in Education

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PART TWO of the Forty-Second Yearbook of the National Society for the Study of Education, entitled *The Library in General Education*, is a comprehensive and thorogoing analysis of the school library field. In that volume school librarianship was subdivided into seven areas: The Library as a Vital Agency in Education; The Library in Action; The School Personnel and Library Service; The Nature and Selection of Materials; Machinery for Implementing Library Service; Preparation of the Staff for Effective Service; and Evaluation and Research. Altho not the result of original investigation, this material shows careful study and analysis and presents the expert opinion and the experience of the investigators and writers who contributed to the volume.

The American Library Association, in conjunction with the Carnegie Corporation, sponsored a quick study of the changes induced by the war in schools and school libraries. Butler (6, 7, 8, 9) compiled returns from questionnaires and summarized results in articles that appeared in various professional periodicals. Her findings are provocative and have inspired school librarians and administrators to institute changes in library procedures to meet presentday needs.

Research in Librarianship: Bibliographies

Few bibliographies listing studies in the field of library research exclusively have been published during the past three years. Kirk (29) listed twenty-four masters' theses as well as bulletins and articles dealing with problems of book supply in school libraries. The list is suggestive of further studies which might be undertaken. Gray (21) in his "Summary of Reading Investigations, July 1, 1942 to June 30, 1943," listed studies made on all phases of the reading problem. The summaries of the investigations devoted to the reading interests of children and young people are of particular interest to librarians.

Fay (19) listed the areas in which sixty or more investigations have been made by students in their graduate studies since the master of science curriculum was begun in the School of Library Service at Columbia University in 1928. The author summarized in some detail studies in two major fields of college library administration: (a) the book collection in relation to the curriculum and (b) the adequacy of book reviewing in subject journals for college library book selection. The bibliography listed thirty-one studies made in these two areas.

Library Administration

Several studies have been made relating to the external control and administration of libraries. Stallman and others (43) listed administrative controls of school libraries according to: (a) the board of education; (b) the public library; and (c) both the board of education and the public library cooperatively. She found that 96.5 percent of all school libraries reporting were controlled by a schoolboard; 1 percent by a public library board; and the remaining 2.5 percent by a cooperative arrangement.

In a study of public library service to public-school children, Stallman (42) indicated patterns of administrative organization of libraries and types of services to children. She undertook the investigation with two major assumptions: that library service meant provision at the main library or at any of its agencies for books, reading guidance, and reference assistance for pupils or teachers; and that, in addition, it meant any special provision within the school for guidance or assistance in the use and distribution of books which are neither textbooks nor school-provided sets of supplementary texts. Data were obtained from forty-two library systems in cities of 200,000 or more population. Included in her findings were the following: (a) Only a small minority of the forty-two public libraries investigated supervised school library branches; in other words, public-school systems administered a very substantial majority of the school libraries in major American cities. (b) Complete statistics of total library service and expenditures for public-school children were obtainable in a great majority of cities only by adding statistics of public library and school library services and expenditures. (c) A steady evolution in the form and quality of public library service to schools is clearly evident, from classroom library to centralized deposits to full-fledged school libraries. (d) The ultimate development of public library service to young people is the complete school library designed for service to school children only.

Proof of the growing importance of the elementary-school library is seen in the study made by Brown (5) of the methods and practices in supplying library service to elementary schools in the United States. The author stated that his purpose was to determine: (a) the methods which were used as the principal means of supplying library service to public elementary schools in cities in the United States with a total population of 10,000 or over; (b) the extent to which these methods were used in geographic sections and thruout the country as a whole; (c) the methods which were used as supplementary or additional means of supplying library service; and (d) the extent to which certain public elementary-school library practices were used.

Ellsworth (17) presented facts concerning trends in book expenditures in fifty-three of the most important universities for the past twenty years. He found that since the depression university library expenditures for books

have not kept pace with the increase in expenditures for educational purposes generally. Small universities have increased their rate of book expenditures faster than medium-sized universities; medium-sized universities, faster than large universities. His investigation led him to conclude, also, that important facts and figures of American universities are not properly collected.

Reagan (35, 36) conducted two studies on the college library exhibit, one based on the literature in the field, the other relating to the use of the college library exhibit. Returns from fifty liberal arts colleges were tabulated. The author found that the typical library exhibit was not used in the "integration of the library program with the instructional program" but rather to show "the independent resources of the library for self-cultivation."

Brown (4) studied conditions governing the service of student library assistants in six college libraries for the purpose of ascertaining the qualifications required, the work performed, and the cost of such service. The author recommended the introduction of personnel management methods in the appointment and supervision of library assistants.

The Book Collection

A number of important studies have been made relative to the adequacy of the college library book collection. Several of them were listed in the summary made by Fay (19) to which reference has already been made in this chapter. Gosnell (20) studied the problem of the obsolescence of books in college libraries. His purpose was two-fold: (a) to obtain a more precise basis for the comparison of libraries with regard to obsolescence; and (b) to present, by the quantitative analysis of three lists of recommended books and by an analysis of library collections, a clearer picture of obsolescence than had been previously available. The rate of obsolescence was computed for nineteen subject fields in the three lists; however, the coefficients of obsolescence were not final. They must be standardized by application to large groups of libraries. Included in a comprehensive list of results and conclusions were the following: (a) the average life of a book is about twenty years; (b) in many college libraries, however, titles over thirty years' old comprise at least half the collection, but less than 10 percent of the books are in active demand; and (c) 60 percent of the collection may account for 90 to 95 percent of the circulation.

Stieg (46) sought a technic for evaluating the college library book collection which would be more objective than a check of the collection against standardized lists. He assumed that important deductions could be made by securing information in regard to the relative frequency of the circulation of books and the proportion of the total collection used by the faculty and the students. He found: (a) that three-fourths of the titles withdrawn by faculty and students circulated only once during the academic year; (b) that during the three years of the study there was a

"steady year-to-year demand" for only a small proportion of all the titles withdrawn; and (c) that the great majority of titles which circulated more than once were recent books. The author stated that, since the study included data from only one college, library norms and standards relative to the findings could not be established.

On the assumption that faculties of colleges often depend upon reviews in professional journals to aid them in the selection of books for the college library, Steele (45) attempted to evaluate such reviews in terms of their strength or weakness when used for book selection purposes. Textbook analysis was used as a basis for developing a score card to be used in evaluating book reviews. Conclusions showed that reviews in educational journals of books on higher education furnished the librarian with sufficient bibliographical information but were not adequate for purposes of book selection for the college library.

Library Routine

One of the recent developments in the library field has been the careful study of certain time-honored routines. A motion and time study was carried on by Battles and others (3) on one item of library routine, namely, loaning a book. A one-card circulation system was used in the library where the study was made. Every operation was analyzed and photographed. The authors recommended: (a) great simplification of each step in the process of charging a book; and (b) reorganization of the books in the stacks to expedite their handling by the staff. The results indicated that similar analysis might be applied with profit to many other library routine procedures.

In an attempt to discover the relation between production and labor cost in the catalog department of a small college library, Knapp (30) kept records of the work produced and of the number and the cost of the hours of labor during the school year 1941-42. Her figures might be useful for other libraries in budgeting, but they offer no suggestions for improving the efficiency of the procedure.

Reading Guidance

No other field of investigation related to libraries claims greater attention on the part of educators and librarians than the field of reading interests and reading guidance. In a synthesis of research on the placement of reading materials in secondary-school literature, Painter (33) summarized available studies on children's reading interests, Grades VII to XII. Among the conclusions formulated were: (a) reading was a major leisure-time activity of girls and boys; (b) tastes changed with age; (c) children read much excellent material and much which is "worthless but harmless"; (d) inability to understand was the reason given most often for disliking books; and (e) the library was the chief source of reading material. These conclusions bear out the findings of other studies made in the past.

In a carefully organized study, Strang (47) used a combination of objective test, controlled interview, and free introspection to secure data on the interests and the response to reading materials of 112 persons from thirteen to fifty years of age. The results represented a cross section of reading ability and interest at the time of the test. The author reported in her summary that so many elements influenced reading interests that any attempt to study types was likely to be unrewarding; that what people read was dictated by their experience and their emotions; and that an apparent relationship existed between a subject's interest in an article, his estimate of its difficulty, and his proficiency in reading it.

Two studies of the reading habits of the exceptional child were made. Schmidt (38) collected information relative to the reasons for the choice of books within a group of 116 mentally retarded girls whose ages and intelligence quotients ranged from thirteen to eighteen and thirty-eight to sixty-nine respectively. Reading habits were found to be similar to those of the average child, altho preference for "readers" over other kinds of books was marked. Thirty-three percent reported that they selected books because of interesting titles; 25 percent, because of pictures. Fourteen percent chose books because they were recommended by other girls; while 9 percent chose books because of teachers' recommendations. Further study with larger groups of girls might give different results.

Polmantier and Gibson (34) reported the book and magazine preferences of 258 delinquent boys ranging from ten to nineteen years of age. They found that the interests of this group differed little from those of average boys in the same age level, and concluded that there was little evidence of the need for specialized books and magazines for delinquent boys.

Eells (15) surveyed the magazine preferences of more than 13,000 students in fifty-five junior colleges. He reported that students read fairly regularly an average of almost one daily paper and two and a half magazines each. *Reader's Digest* and *Life* were the two magazines read most frequently. His findings bear out other investigations in the field but have added significance because of the sampling.

One of the pioneer attempts to evaluate the effects of reading upon the attitudes of young people was made by Jackson (24). The author investigated the effects of reading fiction upon the attitudes toward the Negro race of a group of Southern white children in Atlanta, Georgia. The results showed a small but significant shift from a less to a more favorable attitude in the experimental group. The shift, however, was not lasting. The findings are in accord with what is known of the influence of reading upon attitudes. Jackson recommended that librarians buy and promote fiction in which the Negro is presented in a natural, favorable light.

The problem of the comics continues to challenge the best efforts of investigators. Witty and Coomer (50) conducted a study of the reading of comics at the high-school level and then compared their findings with those made in previous studies at lower grade levels. They found that high-school pupils reported greater interest in the comic strip than in the

comic magazine. Eighteen was the average number read. The median number of comics read by high-school pupils was distinctly lower than the number read in the junior high or elementary school. The comics, nevertheless, tended to hold high popularity at the high-school level and constituted at least one-fourth of the total magazines read. The authors recommended that intelligent direction in the reading of comics be given in schools, and added that the solution to the problem of the comics is to substitute good literature rich in action, adventure, surprise, and excitement.

Teaching the Use of Books and Libraries

The past few years have seen the publication of several excellent library texts and manuals dealing exclusively with book and library skills. In addition, a new emphasis is noted in current educational literature in the teaching of specific skills in the use of books and libraries. Units of instruction appear in many general textbooks in English and social studies. The need for teachers skilful in giving such instruction is apparent, and this has prompted some research during the past three years.

Henne and Lowell (23) restricted their investigation to procedures relating to the training of secondary-school teachers in book skills. The study was made on the assumption that knowledge of children's literature and of materials helpful in teaching should be a primary concern of the teacher-preparation program. Returns came from 153 teacher-training institutions in answer to a questionnaire designed to get information on the following factors: (a) the type of teacher-training institution; (b) the ways in which schools carried on instruction in the use of book and nonbook materials; and (c) the relationship of the laboratory-school library to this instruction. She found that 89.3 percent of the seventy-five laboratory schools having secondary grades were equipped with libraries. Book supplies in those libraries were fairly limited, with 58.2 percent of the libraries having fewer than 5000 books. Fifty and seven-tenths percent of the laboratory-school libraries listing more than 5000 titles had but one librarian. Forty and six-tenths percent of the institutions studied offered formal courses related to the use of library materials in teaching. Both teachers and students agreed that such courses were valuable.

To test the ability of college students to use library facilities, Reed (37) collected data from a large number of college students on the basis of the Test on the Use of the Library for Colleges. Student performance on the test showed specific weaknesses which should be considered by colleges in planning for effective reference service. The findings were as follows: (a) students had not acquired specific knowledge of reference tools; (b) students had not learned to associate questions with books likely to answer their questions; (c) students had not learned to use parts of books effectively and had inadequate knowledge of bibliographical features; and (d) students were not able to evaluate sources of information readily, nor did they understand the functions of various library departments.

In the area of a specialized technic in library usage, a study was made by Miller (32) on the use of the card catalog. Eight hundred seventy patrons in a college library were interviewed in an effort to measure the actual use made of information presented on the catalog card. Fifty-two percent used the catalog as a device for locating books. Forty-one percent used it to select books on a given subject. Seven percent used it to obtain bibliographical data. Further investigation as to the usefulness of information on catalog cards was suggested.

Library Service

One of the important sections in the Forty-Second Yearbook of the National Society for the Study of Education, Part Two, *The Library in General Education*, is Section XI, The Library in Action, in which Kennedy, Johnson, and Witmer described library service at the elementary, high-school, and junior-college level. Witmer (49) presented an anecdotal record of five libraries in diverse regions selected because of the excellence of their library service. The following aspects of service were emphasized: (a) the plans of librarians and teachers for library use; (b) the contribution of the library to pupil growth; and (c) the impact of the school's philosophy upon the library. The author concluded that the school libraries described were active teaching and learning centers, effective agencies for helping young people participate in democratic living, and thereby were aiding directly in the attainment of school objectives.

Johnson (27) described library service in five junior colleges selected upon the advice of the Advisory Group on Junior-College Libraries, a group financed by the Carnegie Corporation of New York. Over a period of two and a half years, this group surveyed junior-college libraries as a basis for giving grants by the corporation for the purchase of books. The survey included facts related to administration and practice, faculty cooperation, book selection, and the library as a unified part of the instructional program. Conclusions emphasized the following trends in junior-college library programs: (a) the adaptation of the library to the needs of individual pupils and teachers; (b) the recognition of the importance of factual studies as a basis for attacking library problems; (c) the extension of library materials to include nonbook materials; and (d) the role of the library in the college guidance program.

Erlandson (18) attempted to analyze the work of the information desk at the University of Illinois. Her purposes were: (a) to determine the qualifications of library assistants at that desk; and (b) to implement the materials for inclusion in a library handbook for student use. The author's findings indicated the importance of at least one year of professional library training for library assistants and showed the necessity for approachableness and professional attitudes. Erlandson also concluded that a handbook was useful as a general tool in explaining the use of the library but could not take the place of an information service conveniently located and attended by a trained librarian.

By a quick survey Johnson (26) brought together facts concerning the relation of college libraries to the instructional use of audio-visual aids. From 398 replies received, Johnson made the following conclusions and recommendations: (a) the colleges cooperating in the study made consistent use of motion pictures and recordings as aids to teaching; (b) few college libraries served as the centralizing agencies for audio-visual aids altho there is a pronounced trend toward such service; and (c) library schools must soon recognize that training in the administration of audio-visual aids is an important part of their curriculum.

Library Surveys, Standards, and Evaluation

Surveys, standards, and evaluation of library service are closely related areas in the library field. Surveys have been made as a basis for formulating standards as well as for ascertaining how these standards have been met. Evaluation follows after library service has been measured in terms of existing standards.

Recent surveys have included library service at three levels: elementary, high-school, and college. Heflin (22) examined state standards for elementary-school libraries in seven states having state school library advisers. The states included were Georgia, Illinois, Indiana, Louisiana, New York, North Carolina, and Tennessee. School libraries were compared on the basis of standards set for the number of books per pupil, number of subscriptions to magazines and newspapers, appropriations per pupil, professional books for teachers, organization and records, housing, lessons in the use of the library, and training of librarians. It was found that state standards were suggestive rather than mandatory. North Carolina has been a pioneer in establishing standards for elementary-school libraries, and her standards are more closely checked and more carefully tabulated than those in the other states which were studied.

The high-school library survey undertaken by Clevenger (12) was authorized by the Commission on Secondary Schools of the North Central Association of Colleges and Secondary Schools and was planned by the administrative committee. The general purpose of the study was: (a) to secure information on existing conditions; (b) to focus attention of local and state school authorities on high-school libraries and library service with a view of bringing about continued improvement; and (c) to make this information available to local and state high-school authorities for purposes of comparison. Statistical summaries were made in each of twenty states and included data on a large number of items, such as the preparation and teaching experience of librarians; the proportion of the school enrolment to the seating capacity of the library; the facilities and equipment; the library's income and expenditures; the ways of extending the effectiveness of library service; the cooperative use of the public library; and the amount spent for books. Clevenger found that most of the librarians held A.B. degrees; many, M.A. degrees; but few, Library Science degrees.

Many librarians had fewer than eight hours of professional library training. The proportion of school enrolment accommodated at one time in the library varied inversely with the number of pupils enrolled in the school. Wide variation was found on all points studied.

The North Central Association's 1943 survey of college and university libraries was undertaken as a part of the association's program for the evaluation and accrediting of schools. In 1943 all member institutions were asked for reports on their library resources and holdings. Data were sought on four specific items: (a) the quality of the book collection with reference to the academic program; (b) the adequacy of periodicals currently received in the library; (c) the expenditures for the library; and (d) the use of library collections. McEwen (31) explained in detail the checklists used for obtaining data, described procedures, and concluded that clear, dependable measures of the use made of college libraries do not exist.

The high-school librarians of Memphis, Tennessee, (40) made a unique investigation of their school library facilities which might well be followed by other school systems interested in comparing their libraries with established standards.

Continued attempts at evaluation have followed the Cooperative Study of Secondary School Standards. Spain (41) analyzed present standards in operation by regional and state agencies for accrediting the work of the school library at the elementary, secondary, and junior-college level. Tables listing these standards were concerned with such items as the librarian, books and periodicals, appropriation, room and equipment, and organization. Advances made by school libraries complying with these standards were marked.

Because of the constantly growing demands of school libraries, administrators, teachers, and librarians must be alert to changing school objectives and procedures. A subcommittee of the American Library Association's Committee on Post-War Planning (1) has prepared a summary of standards that may serve as a guide in appraising school libraries of the future. The standards formulated deal with personnel, book collection, service to pupils and teachers, housing, administration, and extension. Recommendations suggest an increase of library service by an enlargement of the staff, increased book and nonbook materials, adequate library rooms properly equipped, and a library program which encourages the use of library materials.

Needed Research

The significance of the school library depends upon three factors of primary importance: (a) its role as a contributing source to the curriculum; (b) its position as a learning center in the school, a place where ideas are generated and knowledge is unified and integrated; and (c) its function as a dynamic force in promoting the intellectual growth of the individual. The library must be evaluated in these terms.

Carnovsky (10) cited the need for further study in the following areas: government and administrative authority; internal management; and the use of the library. Some of the studies proposed were: (a) the most advantageous extension of library service; (b) the achievement of basic objectives under different types of organization; (c) the application of existing standards to existing institutions; (d) the relationship between a child's intellectual development and his reading; (e) an analysis of books and of nonbook materials in the library; and (f) the competence of children and adolescents in using the library. These are some of the problems which must be faced in the future. The school library needs the help of research to face these problems. School library research, functioning ideally, should, first, measure contemporary conditions and, second, devise methods by which the natural and necessary growth may take place.

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